THE READER

A REVIEW OF LITERATURE, SCIENCE, AND ART.

No. 194, Vol. VII. Saturday, September 15, 1866. PRICE TWOPENCE. Stamped Edition, 3d.

CURRENT LITERATURE:—
Public School Latin Primer.
Dr. Austin's Guests.
The Atlantic Telegraph.
France and Germany, 1865-6.
Astronomy.
Rachel's Secret.
SHORT NOTICES.
CORRESPONDENCE:—
Does Darwinism Favour the "Monogenist Theory as to the Origin of Man?"
Celts in Ireland.
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SCIENCE:—
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True to the Core.
MISCELLANEA.

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NORTH OF EUROPE. MESSRS. ONCKEN, 10 grosser Barstrase, Hamburg, will supply THE READER, receive Books intended for Review, and forward Communications for the Editor.

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SATURDAY, SEPTEMBER 15, 1866.

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THE battle of the Latin Grammars has at length been fought out, and the volume which is now before us is the result. We have in this "Primer" the joint product of the wisdom, scholarship, and experience of nine head-masters; we may suppose that the ground has been debated inch by inch, that concessions have only been made with difficulty and slowly, that at every point and on every principle discussion has been rife, and that this is at least the final settlement of that great question which has been so formidable a bone of contention—how are boys to be taught Latin grammar? Indeed we are told as much as this in the Preface. In a tone of cheerful resignation, the editor informs us that "his own predilections have been often surrendered to the judgment of other scholars," and that this Primer "must be viewed as the *final* result of much consultation, not as the spontaneous product of a single mind." It is hardly necessary to say that in the course of our remarks the question of the actual scholarship displayed in the "Public School Primer" will not enter into our criticism. With this we can have nothing whatever to do. To dispute the elegance and soundness of Dr. Kennedy's Latinity would be simply absurd. We shall merely consider the book with reference to its professed purpose, that of being the classical A B C to boys in the lowest forms of classical schools. It is called a Primer, and as a Primer only we shall or can criticize its pretensions. There is, however, one question which we are perfectly entitled in the beginning to ask. Are the best scholars therefore the best teachers? Are those schoolmasters and tutors who succeed most eminently in imparting polish and elegance to the scholarship of clever young men necessarily for this reason the soundest judges of the capacity of boys of average ability? Head-masters, as it must be remembered, have nothing regularly to do with the lower forms; the "sixth," and possibly the "fifth," alone come within their customary and legitimate province. At some time or other, they may perhaps have occupied the position of "grinders"—the expression by this time seems to have become classical—of very juvenile minds; but even in such cases as these the duration of their early sympathies may be questioned. Our own opinion is that the junior masters of all our good schools are probably more experienced in such matters as these, and appreciate more keenly the difficulties of the youthful student, than any number of head-masters, and would, for this reason, be far more suitable and successful compilers of a boys' Latin Grammar.

We shall gain a clearer notion of the value of the "Public School Latin Primer" if we first devote a brief space to a few words on the general question of grammatical instruction, and some of the various methods in which it can be profitably conveyed. The youngest boys can learn mere forms with accuracy. For them no better grammar could be devised than one which should contain a set of carefully-compiled tables of the usual forms of language, with their inflexions—nouns and verbs. If in addition to this there were given the syntactical rules of the three concords, lists of adjectives and verbs which are usually followed by any peculiar case, regulations and examples to illustrate the distinction between the substantive in dependence and apposition—as, for instance, is done by the old Latin Grammar rule, *Quum duo substantiva*—a very short and simple prosody, or still better, we are inclined to think, none at all, appendices of verbs, as in Dr. Smith's "Principia Latina," and of the irregular nouns in common use—we should have all that a mere grammar for young boys could hope to do. Notwithstanding that there has of late been a tendency in many quarters to lay an undue stress upon the excellence of oral instruction, it is not too much to say that all beyond this must be supplied by the living voice of the master; and we believe that information on other points than those contained in the above-mentioned rules will be far more beneficial when delivered orally than through the medium of print. Words and their inflexions are what little boys have principally to learn from their grammars. The more obscure and difficult syntactical details can, we believe, only be supplied, with any hope of an intelligent comprehension, by the master. But—is the objection urged to such a method as this—by so doing boys will escape the necessity of thinking for themselves, and will completely evade that highly profitable mental exertion which, with no other assistance but the mere written rule, will of necessity be forced upon them. We believe that this objection is entirely out of place. It is of course most desirable that the youngest boy should be taught to think independently for himself from the earliest commencement of his classical training; but the truth is really—as every experienced teacher knows, and as the Rev. J. Pycroft in one of his elementary works once expressed—that *the rule must be an accessory after the fact.* The young learner should go through a course of accurate parsing and translation, should gradually have his attention called to the more subtle and obscure constructions, and then finally, when he has carefully noticed the particulars, have the general rule laid before him. It is, then, with some pre-existent knowledge of the examples in his mind that this general rule will be welcomed by him as the explanation of a difficulty; while if the process is inverted, as is too generally the case, and the rule is given before the necessity and applicability of it are felt, it becomes burdensome and repulsive. A habit of careful and accurate translation from Latin into English is not only the best way of teaching Latin grammar, but of teaching the art of Latin composition—a fact which is sufficiently obvious, but often lamentably ignored.

The same arguments are applicable to all instruction in the philosophy of language and comparative philology. A very little of this, if wisely given by good masters, will fix forms in a boy's memory, and excite his interest and reflective and reasoning powers. But we cannot regard the introduction of these branches of scholarship into the text of a juvenile grammar as otherwise than unnecessary and unwise. The great secret of success in education is not to magnify to the pupil himself the extent of necessary knowledge, not to overwhelm his mind with technicalities, and never to lay down to him a rule of which his experience will not at once enable him to see the force and value. We may here incidentally mention what we regard as a great desideratum amongst schoolmasters of the present day, a good digest of the present ascertained results of comparative philology as bearing on the classical languages. Such a production would be a kind of magisterial *vade mecum*, as useful to the teacher as a primer—one, at least—properly so called to the pupil. Most masters must have felt this want, and we believe that an accurate synoptical digest of the harmonies or contradictory statements contained in Zumpt, Madvig, Key, Donaldson, and others, would be simply invaluable to that great number of instructors who now laboriously, though imperfectly, but more from want of time than of ability, collect the main views on the main questions of philology from these authors, and their own reading. Would Professor Max Müller think so charitable an act unworthy of his fame?

With regard to the "Public School Latin Primer" itself, we cannot, in the first place, but regard it as a misnomer. It most certainly is not a *primer* in the sense of its being adapted to little boys. What it strikes us most strongly as being is a kind of compromise between a mere rudimentary grammatical manual and a more advanced critical treatise—an attempt to combine philological research with childlike simplicity. Thus we have a complete transposition of the cases, according to the last approved theories of Key, Madvig, and Roby—nominative, vocative, accusative, genitive, dative, ablative. This, doubtless, is philosophically right; but we still have our doubts about the advisability of the arrangement. To us it seems that it goes too far, and at the same time not far enough. If Greek and Latin cases and declensions had been compared with Sanskrit, and multiplied in the one case and reduced in the other accordingly, simply and clearly, a great boon would have been conferred upon the fifth and sixth forms of schools; if, indeed, it had been done very well indeed the advantages of such a course might have been felt by the very lowest forms. But we hardly think it worth while making a change which is sure to be particularly puzzling both to boys and master, and which really appears to us to be very unlikely to do anything beyond puzzling them. Again, one of the great recommendations of all school-books is to possess as few divisions and subdivisions as possible; not to oppress the learner with an ominously minute terminology, which, however philosophical and accurate it may be, is quite certain to be deplorably perplexing to the young mind. Now, what is gained by the analysis of the verb into *Finite* and *Infinite*, of which latter four minor divisions are given—Infinitive, Gerund, Supines, Participles? What can the beginner be expected to understand about *infinite*? What clearer notion will be given of infinitive, when we are told that it is a part of the *infinite*? For the same reasons, we are sorry to see the tenses first and second future subjunctive—as they are called in Archdeacon Wordsworth's "Grammar of King Edward VI."—displaced from their old accustomed situations. It may be more philosophical to give *amaturus sim* and *amaturus essem* as the "periphrastic conjugation;" but can it be seriously regarded as practically expedient? With reference to the memorial verses, we believe that to the great mass of boys they can be nothing more than repulsive and confusing.

The syntax, however, is held forth by the editor as constituting the main merit of the volume, a view in which we cannot altogether coincide. Indeed, as it seems to us, if this syntax is to be learnt by little boys, it is wholly unsuitable. It abounds in subtle and vague distinctions and refinements of language to the schoolboy mind, we should imagine, altogether incomprehensible; and in a terminology hopelessly mysterious and bewildering, whatever may be the philosophical excellences which it can plead. We quite agree with the objections which have been offered to it in various letters that have appeared in the *Times* and elsewhere; and notwithstanding Dr. Kennedy's reply, we cannot conceive that *congruentia* will give such learners as this syntax professes to instruct a clearer idea than *concordantia*, or that "With a composite subject plural words agree" is more intelligible than the old rule, "Two singulars are equal to a plural." We pity the beginner struggling with such terms as, *finitæ sententiæ complementum*, and *enunciatio obliqua, trajectiva*, and the ominous paragraph, *de verbo infinito*, used *substantivè, predicativè, obliquè, prolatè post verba prolativa et adjectiva.* These generic terms, resulting from philosophical analysis, seem to us entirely out of place in a Latin *Primer*. They should, undoubtedly, be understood by the teacher and as his pupils' minds become capable of using them, be imparted *vivâ voce*, or else merely introduced when some larger treatise is read by fifth and sixth form boys. The relegation of terms to which the schoolboy

mind has been from time immemorial accustomed cannot but puzzle and perplex. If eventually the new terminology of the "Public School Primer" should serve to convey clearer and more accurate grammatical notions, some good will undeniably have been done. But how much must first be gone through! and is the result likely to be worth the trouble and the pain? *Proprietive relation*, *receptive complement*, *sub-obliqua clausula*, and a hundred other such expressions must almost mystify whole generations of fourth-form boys before they produce any tangible good. It is true that the editor has considerately added a glossary to explain this somewhat cabalistic nomenclature, but it seems rather absurd that such an addition should be necessary to a work of this description.

But there are one or two respects in which the "Public School Primer" shows a wonderful improvement in the art of grammar-making. The prosody is admirable; it is tolerably simple; and, above all, it is short. What used in the old grammars to extend over twenty or thirty pages is here compressed into two. Nor less praiseworthy is the appendix, which abounds in useful and valuable information. These two parts seems to us the best and most practically useful in the book.

The whole grammar is, we need hardly say, well worthy the careful perusal of a master. It has evidently been compiled with great diligence; its scholarship is, as might have been expected, as exact as possible; and there is a certain conciseness in its style which, whatever it may be to the schoolboy, cannot but be a strong recommendation in the eyes of the schoolmaster who reads it. But not even these merits can, in our opinion, constitute it a good school grammar. As we have already said, the book is a kind of compromise; and therefore, if we may judge of its intentions from its name, so far as they are concerned a failure. On the one hand, it is too philosophical—too utterly revolutionary in all its terminology to be a small boys' primer. We believe it would be quite impossible for a boy of ten to read it without becoming despondent and bewildered. On the other hand, it is too compressed to be either a good class-book or grammar of reference for the higher forms, or that which we have already intimated might be produced with considerable advantage, a schoolmaster's *vade mecum*. Should the "nine head-masters" decide upon reconsidering their joint production, we hope they will enlarge the sphere of their consultations, and take into their confidence those schoolmasters who have perhaps more immediately to do with minds of the tenderest age than they have themselves. Good as are "King Edward VI.'s Grammar" and Dr. Kennedy's Grammar, there is still another and a better one wanted; and this want the nine head-masters have, we think, quite failed to supply in the "Public School Latin Primer" which their joint labours have now shown to us.

DR. AUSTIN'S GUESTS.

Dr. Austin's Guests. By William Gilbert. 2 Vols. (Strahan.)

NOTHING is so rare as to come across a story-teller pure and simple; but Mr. Gilbert's clear sketches of the "Doctor's" guests bring out well the mental delusions to which man is susceptible. Take Mr. Gurdon, who is a barrister residing at Chelsea, with chambers in the Temple; he is an able pleader, and a man of sound judgment, with some standing at the Bar. Yet, with all this, he has a mania. Happening to be standing on the bridge which crosses—or rather did cross—the Thames at Blackfriars, and which some time since had to be lightened by the removal of the stone parapet, a very heavy dray crosses, and causes a considerable vibration in the pavement. Mr. Gurdon goes home, and from thence into court, and notwithstanding his attention is directed to the case before him, his mind continually harps upon the unsafeness of the bridge. He passes that same way shortly after, and with many haltings, and a feeling akin to the nightmare, in which your feet are rooted to the ground, he at last crosses, and only reaches home to be seized with a violent attack of typhus, which confines him to the house for some weeks. On recovering, one of his first walks is in the direction of the bridge; and the nearer he approaches it the greater is his terror; but he cannot turn back—something forces him on. Again he is brought down by disease to the lowest ebb of life. However, possessing a strong constitution, he rallies; and once more fatality takes him in the direction of the bridge. But during his last illness the bridge has been pulled down, and he crosses the temporary one without any recurrence of his malady. He felt at once that his delusion had entirely fled; and it has never for a single instant returned. His health is now re-established, and he enjoys a high and deserved reputation in his profession.

An equally strange case is one which the author introduces to the reader as a "Patent Mania." The patient in this instance imagined that he had discovered the means of burning water as fuel; and the absurdity of his behaviour in carrying on his experiments was the cause of his being one of Dr. Austin's "guests." In pursuit of this delusion he not only spent the whole of his own fortune, but also that of his wife's, besides borrowing on every side, and reducing himself to beggary; and even when under the roof of the Doctor he would occasionally appeal to some other patient for a loan to carry on his great work, which he endeavoured to prove would be of the greatest use to mankind.

The most extraordinary delusion of any of the Doctor's patients was the case of a Dissenting minister. He believed that he had swallowed a devil; but what devil it could have been that had taken him under its special protection, unless perchance that of gluttony, for he was an inordinate eater, we were at first at a loss to determine. Little did those worthy ladies—and they were not few—who sat under the Rev. Josiah Morgan, and listened to his eloquence, or sat down with him at those social gatherings for which that church is famous, imagine that their worthy pastor entertained so terrible a guest. Verily their entertainments must have been costly, for he made a regular study of the science of cookery, and he was not a little proud of his knowledge in that department. "Liebig on Food" was far more frequently read by him than the Holy Scriptures. Once, late at night, a sojourner under the same roof, passing by the reverend gentleman's bedroom, was accosted by a voice, and desired to seat himself by the bed. The supposed demon then informs him that he is the unfortunate spirit doomed to inhabit this detestable wretch (alluding to the patient); that he was sent on earth by his master to inhabit some one who would be a useful agent to his master the Evil One, and whom he could lead to do all the evil possible. With great cunning the demon went about to select an object for his tool, and believed he had found in the Reverend Josiah a suitable one; but here he appears to have made a terrible mistake, for the only excess to which his victim went was at table. With him he is therefore doomed to dwell; and in the following soliloquy narrates his sufferings. Of his own selection the demon says:—

> One night I went to a Fiji missionary meeting. The body of the room was crowded, chiefly by women, and on the platform were several gentlemen, dressed in black, with white cravats, every one of whom was evidently charged to the muzzle with eloquence, and only waiting for his turn to discharge it upon the audience. Nothing could be more common-place or vapid than their speeches; yet they produced a great effect. I began narrowly to inspect and criticize the abilities of the different speakers, in order to select the one best adapted to my purpose. But I found greater difficulty in the matter than I had calculated upon. At last a speaker of a far different calibre rose to address the meeting. His appearance evidently caused much interest, especially among the women, from whom I learned that he had lately been left a handsome fortune by a pious old lady.
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> He commenced his address, and was listened to with great attention; and with reason, for in excellency of style he far exceeded all who had spoken before him. His diction was not only fluent and graceful, but there was really an amount of persuasive eloquence in it such as I have rarely heard equalled. Notwithstanding his pathos, and the interest he appeared to take in his subject, I could easily perceive that he was a finished hypocrite. When he lamented the state of barbarism in which the unfortunate natives of those savage islands lived, their total ignorance of the common necessities and decencies of civilized life, their cruelty to each other, and the horrible and degrading idolatry of their religion—if religion he could call it—the tears of the female portion of his auditors flowed abundantly, and the men showed by their breathless silence how much they were absorbed in his discourse. Yet the feeling of the speaker (if he really had any feeling at the time) was solely one of contempt for the people he was addressing.
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> The "possessor" goes on to narrate how, when he found his inability to prompt his victim to any excess, he tried to escape, but finds he cannot leave his prison—a punishment no doubt for having made such a mistake. During his conversation he hints at the probability of changing his abode, should the Reverend Josiah die, and fixes upon his auditor as a fit and proper person to inhabit, which so terribly alarms that gentleman that he escapes from the room, and, after a night of mental anxiety, rises in the morning not a whit refreshed, and fully expects to be told that Morgan has died in the night. His state of mind may be better imagined than described.
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> We will finish with an anecdote which we warrant as fact. A young lady was put into a train alone to go to London. As the train was on the point of starting a gentleman rushed up and got in. At this her friends who were seeing her off were rather annoyed, but thought it did not much signify. Shortly after the train had started, the gentleman jumped up and exclaimed, "This carriage is too heavy, it must be lightened," and straightway his carpet-bag disappeared out of the window. He sits still a few minutes, when he begins again, and this time his coat and waistcoat follow the bag. After a little while he said, "Let us pray for the Duke of Gloucester." Down they go on their knees, the poor girl, only seventeen, too frightened to do anything but obey. When that was done they prayed for the Duke of York, and then for another—in fact, through a whole string of Dukes; they then sit down, the young lady frightened out of her senses. After a few minutes he begins again: "It won't do; I can't stand it; the train is too heavy; either you or I must get out; I don't want to, so you must go." The girl in despair says, "But we have not prayed for the Duke of Northumberland." "Ah! no more we have." Down they go again on their knees, when luckily the train stopped at a station, and the young lady called the guard, when it was discovered that the gentleman was a lunatic escaped from Hanwell.

THE ATLANTIC TELEGRAPH.

History of the Atlantic Telegraph. By Henry M. Field, D.D. (Sampson Low & Co.)

ONE of the most interesting records of Oliver Cromwell is that collection of all the contemporary newspaper paragraphs which contained his name, and which is still preserved in the British Museum. A similar curiosity exists regarding the Atlantic Telegraph. Mr. Bartlett, an American gentleman, has compiled a gigantic scrap-book made up entirely of newspaper cuttings, classified under different heads, and neatly arranged in double columns on nearly four hundred folio pages. The matter would make between three and four octavo volumes of the size of Prescott's Histories; and the historical sketches are set off by illustrations taken from the pictorial papers. Though it is not likely ever to be printed, we may give the title proposed, "The Atlantic Telegraph, its Origin and History, with an Ac-

count of the Voyages of the Steamers Niagara and Agamemnon in Laying the Cable, and of the Celebration of the Great Event in New York, Philadelphia, Brooklyn, Montreal, Dublin, Paris, &c.; together with the Discussions, Sermons, Poetry, and Anecdotes relating thereto; also, a History of the Invention of the Electric Telegraph. Illustrated with Maps, Plans, Views, and Portraits, Collected from the Newspapers of the day, and Arranged by John Russell Bartlett." Mr. Field's book, though conceived on a more moderate scale, will probably be sufficient for most readers of the present day. The success of the attempt of 1866 has been so complete, that we are disposed to underrate the original difficulties of previous years, and to set down the failures to want of good management. Mr. Field will put an end to all ideas of that kind. "There is nothing in the world," he says, "easier than to build a line of railroad, or of telegraph, *on paper*." How few of us who found after the Great Eastern the other day had reached Hearts' Content that we did not get the news of the passing hour from New York, supposed there ever could have been any obstacles in stretching the wires across the solid ground of Newfoundland! Difficult as it was, there the first idea of an Atlantic Telegraph was conceived. Bishop Mullock, head of the Roman Catholic Church in the island, lying becalmed off Cape North, summed up the distances, reckoned the soundings, and in November, 1851, wrote: "I hope the day is not far distant when St. John's will be the first link in the electric chain which will unite the Old World and the New." He may dispute the claim of priority of conception with Mr. Gisborne; but it was the latter who took the first practical steps towards its execution:—

> On the 4th day of December [1851], I accomplished the survey through 350 miles of wood and wilderness. My original party, consisting of six white men, were exchanged for four Indians; of the latter party, two deserted, one died a few days after my return, and the other, "Joe Paul," has ever since proclaimed himself an ailing man.

Nor had these difficulties been at all diminished when the time came for laying the line itself:—

> The distance, by the route to be traversed, was over 400 miles, and the country was a wilderness, an utter desolation. . . . To provide subsistence at all for man and beast, it was necessary to keep near the coast, for all supplies had to be sent round by sea. In following the coast line, they had to wind around bays, or to climb over headlands. If they struck into the interior, they had to cut their way through the dense and tangled wood. There was not a path to guide them, not even an Indian trail. When lost in the forest, they had to follow the compass, as much as the mariner at sea. In many respects, this one had the features of a military expedition. It moved forward in a great camp. The men were sheltered in tents, when sheltered at all, or in small huts which they built along the road. More often they slept on the ground. All through the long days of the summer of 1854, and through the months of autumn, every cove and creek along that southern coast heard the plashing of their oars, and the steady stroke of their axes resounded through the forest. As the season advanced, all these difficulties increased. For nearly half the year the island is buried in snow. Blinding drifts sweep over the moors, and choke up the paths of the forest.

Here Mr. Field's authorities fail him. "This is a chapter in the History of the Telegraph which has not been written, and which can never be fully told." Meanwhile he had been sent by the Company to England to order a cable to span the Gulf of St. Lawrence, to connect Cape Ray with the island of Cape Breton. Though England could provide a cable, amongst all its speculators none could be found to invest any money in such a scheme. Mr. Brett alone, the father of submarine telegraphy in Europe, subsequently took a few shares in the Newfoundland line. The Company—"The New York, Newfoundland, and London Telegraph Company"—then consisted of five persons only: Peter Cooper, Moses Taylor, Marshall O. Roberts, Chandler White, and Cyrus W. Field. They went down to the Gulf of St. Lawrence to lay their cable, as if to a pleasure party. The cable was packed away ignominiously, as a thing of no consequence, in an unwieldy sailing vessel, whose name is unknown, whilst the triumphant engineers sat in one of the finest steamers belonging to the Charleston line, and dragged their precious burden along, much as Richelieu, in the well-known picture, tows his prisoners of state up the current of the Rhone. Forty miles of that cable soon lay hopelessly at the bottom of the sea, and "Mr. Field again sailed for England to order another cable, which was duly made and sent out the following summer. This time, warned by experience, the company invited no party and made no display. The cable was placed on board a steamer fitted for the purpose; it was laid without accident, and remained in perfect working order for nine years." The first part of the work was now done. The telegraph had been carried beyond the United States through the British Provinces to St. John's, in Newfoundland, a distance from New York of more than a thousand miles.

But only seventy miles of this was laid under the deep sea. That portion of the task had been accomplished with great difficulty. Was it likely that a line of two thousand miles could be laid at all? What was the bed of the ocean like? What was its depth? Which would be the best course to take? The fate of the cable from Sardinia to Algeria was remembered. All was going on well there, until suddenly "about two miles, weighing sixteen tons, flew out with the greatest violence in four or five minutes, flying round even when the drums were brought to a dead stop, creating the greatest alarm for the safety of the men in the hold and for the vessel. The bottom of the Mediterranean is volcanic, and is broken up into mountains and valleys. The cable had doubtless passed over some Alpine height, and was now descending into some awful depth below." Such also was the character of a part of the basin of the Atlantic. To explore it thoroughly was absolutely necessary in the first instance. To follow the arc of a great circle from St. John's to Valentia is another expression for taking the nearest path. Looking at the frontispiece to Mr. Field's book, we see that the bed of the Atlantic, which is jaggy and precipitous from the Cape Verd Islands to a point far northwards of the Azores, presents a broad smooth plain towards the end of the section, which has been called the Telegraph Plateau, and is now as well known as the Grand Plateau of Mont Blanc, which we all have seen from Chamounix. Very fortunately this submarine plain lies exactly in the direction of the arc. Before exact soundings had been taken, the existence of the plain had been known, but it was supposed that it lay at the foot of such a stupendous mountain which divided it from the Irish bays that the cable would hang from the summit, swinging with the tide, till at last it would snap and fall into the abyss below. These fears were soon dispelled. The greatest depth of the ocean over this plateau is not much over two miles, and the side of this submarine Alp is not very much steeper than Holborn Hill. It is lined moreover with ooze as soft as moss, composed of myriads of shells, too small to be discovered by the naked eye. Above all these shells were found *unbroken*. They had sunk, when the creatures which inhabited them expired, down to the ocean bed; and if they could remain there for ages uninjured, no one need fear for the iron cord which was destined to disturb their rest.

The possibility of the undertaking was now demonstrated. The daily journals have been so full lately of its accomplishment, and of the resurrection of the cable of '65, that we need not repeat a twice-told tale. The author has been for two years engaged on this book, and its most important parts have been submitted to the correction of the chief authorities both in England and America. It forms therefore the most authentic record of this undertaking, from the very beginning. One great deficiency we must note—there is no map or chart. This will be necessary to make the second edition complete, which must also contain the story of the raising the cable of '65. Mr. Field's materials will be as authentic for this episode as for the rest. Mr. Cyrus W. Field, more fortunate than some of his fellow-labourers, has survived to stand on the shores of Newfoundland and see the two cables fixed, whilst Brett, and Hudson, and Berryman, who helped to fabricate them, and who arranged the pillows of their bed, are long since gone to their rest.

FRANCE AND GERMANY IN 1865-66

Travels in France and Germany in 1865 *and* 1866. By Captain Spencer, Author of "Travels in Circassia." 2 Vols. (Hurst and Blackett. 1866.)

WE have all met in the course of our lives with the Englishman who has never been, and never wishes to go, out of England. He has a kind of general idea that the Continent is for the most part inhabited by sham counts and swindlers of every description, who live upon frogs, snails, and other abominations, drink sour wine, intrigue with each other's wives, raise revolutions, and lose no opportunity of cheating every Englishman who comes within their reach. He thanks Heaven every day that he is not as these men are, and comfortably hugs the belief that, except in his own favoured country, there is no religion, no honour, no morality; and worse still, no money. Happily in these days of steam this class is rapidly becoming extinct, for all Englishmen, or what comes to about the same thing, all educated Englishmen, now travel on the Continent. But as the national character cannot change all at once, this state of things is raising up a new class worse than the first, because less excusable. We mean the man who travels, often a great deal, but who cannot be brought to look at anything except through a thick veil of the narrowest English prejudice. Mr. Doyle has immortalized this character in his "old gentleman who thinks that the Rhine would be magnificent if it only had English institutions;" but, for a type of the class far more perfect than even the graphic pencil of the ex-illustrator of *Punch* could sketch, commend us to the author of the work before us. Although he has had, as he tells us, a foreign education, and has spent a great portion of his life in travelling, he is utterly incapable of understanding or appreciating anything that does not fit in with the narrowest and most straight-laced of English notions. Although he appears to know something of French and German (for besides telling us on every possible occasion that he understands those languages, he deluges us with a perfect torrent of French and German interjections and other scraps), yet he does not appear to have imbibed the faintest particle of French or German feeling. Hence we are treated from time to time to a long rambling conversation with an old gentleman in the Faubourg St. Germain, or the wild ravings of a German student over his beer; whilst the author complacently fancies that because he has penetrated into a French *salon* or a German *kneipe*, he can supply the English public with an unprecedented amount of information upon the state of public feeling in the two countries. It will be only necessary to say that the old gentleman desired the return of Henry V. to the throne of his fathers, whilst the beery student believed in the possibility of a united Germany, with Prince Alfred for Emperor! The individuals from whom these sentiments were gathered are certainly specimens with which it is rarely the fortunate lot of a traveller to meet. In an Ethnological museum they

would be invaluable. But if the views of Captain Spencer's friends are curious, some of his own are much more so. He can see nothing to admire in the whole Napoleonic *régime*, except those unsightly rows of tall white houses with which all the large towns in France are rapidly becoming disfigured. However, this is not so much to be wondered at in a writer who considers the spire of Strasbourg Cathedral the most beautiful erection in Europe. But these and many other absurdities might only serve to amuse us, if there were any features in the work to redeem it from being one of the worst books of travels ever published. Unfortunately there are none. The whole work, from beginning to end, is one dull, monotonous rigmarole of sermonizing and moralizing, compounded of that rudimentary sort of Christianity represented by the *Morning Advertiser* and *Record*, and a proportionately rudimentary species of politics. The author has not the remotest idea of description. Of all the places he has been to, though he tries to describe several, he never succeeds in giving the faintest notion of what a single one is like. In fact, he seems half conscious of this himself, for after about the third line of attempted description he generally relapses into his old thread of sermonizing again, and drags on miserable platitudes through endless weary pages.

As if this were not enough, his English is so awkward and slipshod that it is impossible occasionally to do more than make a faint guess at his meaning. In one blundering sentence, at page 12, Vol. II., he makes Paris the capital of a petty German State. Speaking of Munich, he says: "For the capital of a petty German State, I do not know of any town, with the exception of Paris, where luxury is so widely diffused." We have already alluded to the architectural peculiarities of this author, so the following need not perhaps be the cause of much astonishment. On page 67 the description of St. Stephen's Cathedral in Vienna has this extraordinary statement: "I was glad to find that the old rickety-looking spire, so long an eyesore to the admirer of Gothic architecture, has been pulled down, and replaced by one precisely similar to its predecessor." What does this mean? If the first spire was an "eyesore," why is this admirer of Gothic architecture glad that it has been replaced by one precisely similar? We are utterly at a loss to understand. We might point out, did our space permit, many more sentences which it would be equally difficult to extract any meaning from; but as the book ends with "a steam voyage down the Danube, and a ride across the mountains of European Turkey from Belgrade to Montenegro," we cannot close this article without a notice of that portion, particularly as we are promised another work upon Eastern Europe in a few months, of which we must look upon these chapter as a kind of foretaste.

This portion of the work is chiefly characterized by an intense hatred of the Turks, in spite of the fact that Captain Spencer acted during a considerable part of his journey as a kind of Mentor to a young Turk, or, as he somewhat affectedly calls him, "Osmanli," whom he assisted in preparing a book upon Europe for the edification of his countrymen. If the pupil be worthy of his tutor, we are very thankful that our ignorance of Turkish (we beg pardon, "Osmanli") will preclude the possibility of our being afflicted with that volume on its appearance; but had we known this youthful follower of the Prophet, we might have given him a suggestion. Captain Spencer would have the Turks expelled from Europe, simply because they profess a different religion from that of the peoples whom they govern. Would it not be open to an Oriental to argue in favour of the expulsion of the English from Asia for the same reason? We throw out this hint for the benefit of our Oriental friend in his next edition. As to his worthy Mentor, we are afraid it would be impossible to get him to see it, for it is a waste of time to argue with a man who rejoices in eyesores, and appears to believe Paris to be the capital of a petty German State.

ASTRONOMY.

Popular Astronomy. By G. B. Airy, Astronomer Royal. (Macmillan & Co.)

A Treatise on Astronomy. By Hugh Godfray, M.A. (Macmillan & Co.)

Handbook of the Stars. By R. A. Proctor, B.A., F.R.A.S. (Longmans, Green, & Co.)

SCIENCE made easy, like the royal road to knowledge, is fit only for kings. We generally take up popular scientific works with a feeling of apprehension, fearing that the science may have been degraded to the minds of uneducated persons rather than hoping that their minds will ever be raised to an appreciation of the subject, however simply stated; at most, the amount of knowledge conveyed will be but little, and therefore dangerous. The volume on "Popular Astronomy" before us, a reproduction of some lectures delivered at Ipswich, in March, 1848, by the Astronomer Royal, to the Members of the Museum and their friends, is intended to instruct the general reader in the construction and use of the Equatorial, the Transit instrument, and Mural circle, &c., and to expand his mind by contemplating the many sublime truths and speculations which have been deduced from the observations made by aid of these instruments; and yet we are promised that throughout the book no use is made "of algebra, or any other science, such as must be commonly of an unintelligible character" to most people. To treat the mathematical branch of astronomy, and omit all mention of algebra and trigonometry, sounds somewhat paradoxical; nevertheless, we assure our readers that by an easy ascent the most ignorant of such subjects is enabled by a study of this work to reach that point from whence he can survey with satisfaction the shape of the earth, its motions, and those of the heavenly bodies, and appreciate many of the general laws that govern the universe, understanding "the leading steps of the process by which the distance of the sun and stars is ascertained by a yard measure—the process by which the weight of the sun and planets is measured by the pound weight avoirdupois." Archbishop Whately justly remarks "that the analytical is the more interesting, easy, and natural kind of introduction; thus at once presenting the subject in an interesting point of view;" and indeed this little work may be regarded as such an introduction to astronomy, and to the most casual reader will impart some idea of the matter, but to others it will incite the desire to undertake the study according to that harder synthetical mode of procedure necessary to a thorough knowledge of the subject.

A more appropriate work than that of Mr. Hugh Godfray for a student wishing to attain a practical knowledge of astronomy could not be found. The subject is treated in a most lucid manner, and those chapters devoted to the various instruments in use in the observatory are unequalled by any other treatises we have met with. The author confesses the difficulty of being original in an elementary work, and especially on a subject which has occupied men's thoughts from the earliest times; however, if we cannot discover great originality, we appreciate other difficulties he has overcome, and the successful attention he has paid to matters of far greater importance—*i.e.*, clearness of demonstration and simplicity of diction. The order he has adopted of leading the mind step by step from less to more complicated phenomena deserves much praise, and the addition of examples and problems to each chapter will be found advantageous to those studying for the examinations for honours.

Mr. Proctor's little work is indeed an indispensable handbook of reference for the student of astronomy. The greater part of the volume consists of tables, which, he tells us, were drawn up at different times for his own use. Table I. is a catalogue of 1,500 stars, collected in constellations, arranged alphabetically, opposite to each of which, in separate columns, are given the corresponding number in the British Association Catalogue, Flamstead's number, and Bayer's Greek letter, or other letter by which the star is known. About 200 of these stars are noted as double, multiple, or variable; in the seventh column is indicated the right ascension of the star, correct to one-tenth of a minute of time for the year 1880 (and so approximately correct to the end of the century); the last column gives the star's declination, correct to one minute of an arc for the same year. "The use of such a table," he justly remarks, "is to enable the student at once to find the right ascension and declination of any star likely to be referred to, and thus to find the star in the chart, just as he would find a town in a geographical map from the longitude and latitude in the index; or, if the star is omitted in the chart, he will be able to supply the omission." Table II. is a list of names, mostly corruptions of Arabic words, which have been given to some of the fixed stars. When a star has more than one name, arising probably from its belonging to more than one constellation, or again, when stars, being situated in similar parts of different constellations, bear the same name, a reference to this list will prevent otherwise unavoidable confusion. By aid of Table III. the slow variation due to precession (the retrograde motion of the equinoctial points on the ecliptic,) for points separated by arcs of 5° of right ascension and declination all over the sphere can be ascertained; the method of proceeding has been clearly explained by an example given at page 9. This table also serves to convert North Polar distances into declinations, and hours and minutes of right ascension into degrees.

Mr. Proctor discusses at length the advantages and defects—distortion of large and small figures, variation of scale and of area—consequent upon the *gnomonic*, *stereographic*, *equidistant*, and *orthographic* projections of the sphere.* He dismisses the consideration of the orthographic method, because, in spite of its many elegant and valuable properties, it is neither adapted nor often used either for celestial or terrestrial maps. With regard to the gnomonic projection, after having reviewed the several interesting geometrical properties which render it very appropriate for star maps, he goes on to observe that, since it is desirable that a series of maps should be uniform in size and shape, there are only five methods to choose from, for a sphere gnomonically projected on tangent planes uniform in size and shape must together form a regular solid circumscribing the sphere, of which there are but five, of these he rejects three, the tetrahedron, the octahedron, and the icosahedron; the first because the distortion and variation would be excessive, the two latter because they present more faces than the remaining two regular solids (the cube and dodecahedron) and give at the same time equal distortion and scale-variation; finally, he proves that the dodecahedron possesses advantages over the cube for the purpose of popular star-maps, since the distortion, scale-variation, and variation of area are here not nearly so great as with the cube. Of the stereographic projection, Mr. Proctor remarks that although best for a celestial atlas, as it gives the relative positions of the stars forming small groups very correctly, still the variation of scale and area of a complete hemisphere by this projection is very deceptive, and the distortion of large star-groups very great, and, consequently, calculated to give the student an incorrect notion of the distribution of the stars. Our author considers the equidistant projection the best

* Of the word projection, although used to denote any mode of drawing a map so long as founded on some definite geometrical principle, Mr. Proctor gives the following definition: "If from a fixed point lines be drawn to all the points of a given curve, the curve in which these lines meet a given surface, is the *projection* of the given curve on the given surface for the fixed point."

suited for the map of a complete hemisphere, as it gives a more correct idea of the positions of the stars, an opinion, as Mr. Proctor observers, contrary to that of Sir J. Herschel, &c. But when the student desires to form separate maps of small parts of the heavens the modified conical projection is calculated best to serve the purpose, and Table IV., the use of which is clearly explained, contains a list of the values necessary or convenient for this object. Table V. (misprinted Table VI., page 40), gives the points in which the ecliptic crosses the meridians, and consequently will enable the student to trace the ecliptic in any map crossed by this circle. With the aid of Table VI., which shows the appearance of the heavens at successive hours for every day of the year for the British Isles, one may become perfectly acquainted, not only with the constellations, but also with the small groups and separate stars. In conclusion, we beg to state our assurance that every student of astronomy, who may use this valuable little book, will feel grateful to Mr. Proctor for the labour and time he has spent in its compilation.

RACHEL'S SECRET.

Rachel's Secret. By the Author of "The Master of Marton." 3 Vols., 31*s.* 6*d.* (Hurst and Blackett.)

THIS is one of those affecting stories which appeal to our sympathies, and which, as they convey a good moral, are not without advantage as well as interest to the reader. The style reminds one much of that of some of the most popular writers of the day—being reflective, with poetic descriptions of nature interspersed. Life itself partakes so much of the melancholy, that we cannot be surprised to find novelists aiming at those scenes which most move our affections and impress us with wholesome, if somewhat sad, forebodings of the future. Fiction does well in following truth, and in good writers we often find the truth merely disguised with fictitious names, and thus it is that novels are popular. We are apt to forget that although we are the inheritors of the wit and knowledge of the past, we none the less have our own peculiar heirship of suffering to endure; and while we fancy ourselves wiser for the former inheritance, we can only gain life experience from our own age, without the teaching of the latter. There are, no doubt, characteristic features in every century; but one ingredient can never be left out, the tone which arises from our very existence—a tone, however gladsome at first, sure by degrees to modulate into a minor key.

"Rachel's Secret" is a novel of merit. The plot is not very new, depending on a secret marriage; but the evolution is well managed, and the *dramatis personæ* assert their own existence.

A young man of five-and-twenty, Dunstan Dayne, is introduced to us *à la Dickens*, sitting by a fire which itself personifies misery, forecasting evil, because he has failed to secure an appointment as engineer to a railway which is being made. While in this dreary state, he receives a letter, conveying the appointment which his predecessor has been obliged to resign.

Dunstan goes to the scene of his engineering, and then the real story commences to work itself out. The Doyles receive the hero at their farmhouse; and this said farm, with its operations, and the farmer and his wife, are admirably drawn. Near the Doyles live the Gilmours, a family possessing a landed estate a good deal encumbered. The Gilmours are under a curse, from some ill-doings connected with some former marriage. Besides this, there is a skeleton in Mr. Gilmour's private closet, which is not revealed till the last. Mr. Gilmour had lost his wife, who died at twenty-two. While she was in her confinement, on a snowy night, there came a ring at Mr. Gilmour's door, and a woman and child were found there. The woman falls dead, and the child, Rachel Dallas, is taken care of by an old Scotchman who lived near. Dunstan Dayne meets with Miss Gilmour, and falls in love with her. She has only one brother, Lewis, a delicate, consumptive youth; and, as Mr. Gilmour is saving everything for his son, the engagement between Dunstan and Winifred is permitted. We are informed here that Rachel is beloved by David Doyle, son of the farmer, but refuses him. The love-match does not run smoothly between Winifred and Dunstan, owing to the miscarriage of a letter from the lady to her lover, which she writes on the eve of starting for the Continent, where the Gilmours are going for the sake of Lewis's health, he having broken a blood-vessel. David Doyle, who is again refused by Rachel, enlists as a soldier for the Crimean War, and a fire having taken place at Doyle's Farm, the farmer suffers much loss, David having neglected to insure the wheat ricks while trying to obtain Rachel as his wife. We are now in a state of misery. The farmer and his wife are wretched from the loss of their son and their property, and their lodger thinking himself jilted, gets shot through the arm by his own carelessness. At this juncture Rachel appears on the scene as the good angel of the book. She nurses the sick, and is so good to Dayne, that he engages himself to her. Rachel is truly attached to Dayne, but he only imagines himself devoted to her because of her goodness, which inspirits him in his despair. The Gilmours return home on the death of Lewis, at whose funeral Mr. Gilmour falls down in a fit. The missing note turns up. Rachel resigns her engagement with Dayne, and goes to nurse Mr. Gilmour. Rachel here discovers the secret, which is, that Mr. Gilmour had really married her mother, and kept the certificate in a certain escritoire. This marriage would bastardize Winifred, who has confessed her attachment to Rachel. Rachel burns the certificate, and goes as nurse to the Crimea, where she dies. Dayne marries Winifred, but they are childless. David Doyle comes home and finally settles comfortably, marrying his cousin.

The story is told with much pathos, and the strength of the writer seems to reside in the power of interesting us with simple descriptions. The farm and its owners are charmingly drawn. The character of the hero, and, in short, of the principal personages, are ably and correctly represented. Without being sensational, "Rachel's Secret" is, nevertheless, a novel which will be read with much pleasure, being, in truth, founded on a never-failing foundation of interest—a woman's self-sacrifice and disinterestedness.

Wealth and Welfare. By Jeremiah Gotthelf. Two Vols., post 8vo, pp. 592, 21*s.* (Strahan.)—"What music there is in the name home—to the husband returning from his daily toil, to the boy on his way home from school, and to those who have been long absent from the honoured roof! How many and varied are the circumstances we love to recall that have happened there. It was into this room that after some terrible boyish scrape we were called, not to be punished, but to be mildly reasoned with and admonished; in this we received the last kiss and blessing of a fond and indulgent parent. No matter where it is situated, or how poor, home ought to be to all the dearest place on earth. But is it so? In how many houses is not happiness a mirage! It is not wealth, it is not rank, that gives to home that indescribable charm it possesses. When we are young we love it, when old we venerate it. How many a one in boyish pride delights to tell his companions of his own home, of his parents, and his sisters and brothers, and all that are dear to him; and when the boy is an old man, how often does he look back to the happy days of his youth. But it is not only the young who are happy:—

> "Though the spring of our life is a beautiful time,
> The sere leaf of man claims some happiness too;
> When it comes it is welcome, nor will we repine
> That the sweet days of childhood too swiftly flew."

Now the principles set forth in "Wealth and Welfare" are exceedingly good, though the work itself is far from smartly written, and it is rendered somewhat more interesting than it otherwise would have been by the glimpse it gives of a country life in Switzerland. Next to his mother, Andrew is the most prominent actor, and it is through his search for a wife that arise the many incidents upon which the author has at some length dilated; and we scarcely know which most to admire, the strong self-denial of the mother, or the affection of her son.

Thrice His: a Tale. 2 Vols. 21*s.* (Bentley.)—A well written tale, giving much information about life in India amongst the Anglo-Indians. The disclosures of the manners and habits of the English in India are by no means favourable to the class of people represented. The plot of the novel is this: A young lady becomes thrice the property of the hero, simply because she never belongs to him at all, although he has the most claim to her hand, having first of all saved her from drowning; secondly, from divorce, with its attendant disgrace; and thirdly, in death, when she finally thinks of him alone. Laurence Amyot saves the daughter of Sir John Carr from the waves, which have swallowed up her father, and cast her within reach of the shore. Miss Carr, however, does not marry him, but a man who persuades her that he is deeply in love with her. She marries Captain Wilmer, even while she is meditating about accepting Amyot. Her life in India, whither she accompanies her husband, is well described. She is a coquette, but without overstepping the bounds of propriety, although some Indian officers, who are considered great lady killers, try their utmost to point out her husband's flirtations, and their own devoted attachment to herself. The heroine returns to England, and by Amyot's kind guardianship a reconciliation is brought about between the husband and wife. There is a clever *exposé* of the tricks of the spirit-rappers in the novel, and altogether, though the plot is but slight, the tale and the style of narration are interesting.

PUBLICATIONS OF THE WEEK.

Albert. Two Chorales by His Royal Highness the Prince Consort, with accompanying Words in English, Welsh, Gaelic, Irish, and German. Prepared by the Rev. Peter Maurice, D.D. 16mo, sd. *Simpkin.* 6d.

All Saints' Church, Margaret Street. Reprinted from the *Orchestra.* With an Appendix containing a List of the Ordinary and Special Services, and of the Charities in connexion with the Church. Fscp. 8vo, sd., pp. 32. *Hayes.* 6d.

Barry (F.). Over the Atlantic and Great Western Railway. Cr. 8vo, bds., pp. xv.—146. *Low.* 1s.

Collier (William Francis, LL.D.). History of Greece. (Nelson's School Series.) Sm. cr. 8vo, pp. vii.—134. *Nelson.* 1s. 6d.

———. History of Rome. (Nelson's School Series.) Sm. cr. 8vo, pp. vii.—146. *Nelson.* 1s. 6d.

Davenport (John S.). Christian Unity and its Recovery. 8vo, sd. *Bosworth.* 2s. 6d.

Delpech (J., B.A.). Beginner's Comprehensive French Book, containing the principal Rules of Pronunciation with all their exceptions, Rules on the Accidence with the Conjugation of all the French Verbs, Regular and Irregular, the Literal Translation of a great number of Fables, numerous English Exercises composed with Words taken out of the Literal Translations, nearly all the Fables which Fénelon wrote for the Education of the Duc de Bourgogne, a Selection of La Fontaine's Fables, and a French-English Dictionary of all the Words contained in them. Cr. 8vo, pp. viii.—326. *Trübner.* 4s. 6d.

Field (Henry M., D.D.). History of the Atlantic Telegraph Post 8vo, pp. 364. *Low.* 7s. 6d.

Goddard (Julia). The Boy and the Constellations. With Illustrations. Sq. cr. 8vo, pp. viii.—137. *Warne.* 5s.

Harland (Marion). Alone. New Edition. (Run and Read Library). Fscp. 8vo, bds., pp. 315. *Ward and Lock.* 2s.

Heffernan (D. Edward). Descriptive Index to the Killarney Lakes and surrounding Scenery; showing how all unnecessary Expenditure may be avoided, and the Leading Objects of Interest visited in One Day. 16mo. *Simpkin.* 1s. 6d.

Hennessy (J. Pope). Napoleon the Third and the Rhine. 8vo, sd. *Hardwicke.* 1s.

Hopps (John Page). Prayers for Private Meditation and the Home. 2nd Edition. Fscp. 8vo, pp. vii.—72. *Whitfield.* 2s.

Kingston (W. H. G.). Paul Gerrard, the Cabin Boy. With Illustrations. Fscp. 8vo, pp. 372. *Routledge.* 3s. 6d.

Lightfoot (J. B., D.D.). St. Paul's Epistle to the Galatians. A Revised Text with Introduction, Notes, and Dissertations. 2nd Edition, revised. 8vo, pp. xiv.—367. *Macmillan.* 12s.

Minutes of the Wesleyan Conference, 1866. 12mo, bds. *Office.* 1s. 4d.

Newman (Francis W.). Handbook of Modern Arabic, consisting of a Practical Grammar, with Numerous Examples, Dialogues, and Newspaper Extracts; in a European Type. Post 8vo, pp. xx.—191. *Trübner.* 6s.

Pratt (Anne). Flowering Plants of Great Britain. The Grasses, Sedges, and Ferns. With Coloured Plates. New Edition. 8vo, pp. x.—140. *Society for Promoting Christian Knowledge.* 10s. 6d.

Pridham (Arthur). Notes and Reflections on the First Epistle to the Corinthians. Post 8vo, pp. ix.—452. *Longmans.* 5s.

Procter (Adelaide Anne). Legends and Lyrics. A Book of Verses. 9th Edition. Fscp. 8vo, pp. viii.—256. *Bell and Daldy.* 5s.

———. Second Volume. New Edition. Fscp. 8vo, pp. vi.—223. *Bell and Daldy.* 5s.

Rachel's Secret. By the Author of "The Master of Marton." 3 Vols. Post 8vo, pp. 957. *Hurst and Blackett.* 31s. 6d.

Reid (Captain Mayne). The Bandolero; or, a Marriage among the Mountains. With Illustrations. Post 8vo, pp. 308. *Bentley.* 6s.

Richards (Alfred B.). Religio Animæ, and other Poems. Fscp. 8vo, pp. vii.—200. *Mozon.* 7s.

Ros Roy Canoe, Description of the, Built for a Voyage through Norway, Sweden, and the Baltic. With Illustrations. *Low.* 1s.

Ross (Charles H.). Eldest Miss Simpson, her Haps and Mishaps; her Offers and Engagements; her Grandest Success and most Woeful Failure. With numerous Illustrations. Post 8vo, sd., pp. 125. *Ward & Lock.* 1s.

Ross. Merry Conceits and Whimsical Rhymes. Written and Drawn by Charles H. Ross. Sq. cr. 8vo. *Routledge.* 2s. 6d.

Routledge's New Coloured Primer. Illustrated. Sq. cr. 8vo *Routledge.* 1s.

SANS Merci; or, Kestrels and Falcons. By the Author of "Guy Livingstone," &c., &c. New Edition. Post 8vo, pp. 405. *Tinsley.* 6s.

SAWYER (William). Ten Miles from Town. With Poems. 16mo. *Freeman.* 2s. 6d.

SELECTIONS New and Old. With a Preface by the Right Rev. the Lord Bishop of Oxford. Fscp. 8vo, pp. iv.—316. *Masters.* 4s. 6d.

SPURGEON. Our Own Hymn-Book. A Collection of Psalms and Hymns for Public, Social, and Private Worship. Compiled by C. H. Spurgeon. 32mo. *Passmore and Alabaster.* 2s. 6d.

STAVELEY (E. F.). British Spiders; an Introduction to the Study of the Araneidæ of Great Britain and Ireland. With 16 Coloured Plates. Post 8vo, pp. xvi.—280. *L. Reeve.* 10s. 6d.

TANNER (Thomas Hawkes, M.D., F.L.S.). Index of Diseases and Their Treatment. Fscp. 8vo, pp. xxxi.—424. *Renshaw.* 10s. 6d.

TESTAMENT. Novum Testamentum Græce in usum Scholarum. Ad Fidem Testium antiquissimorum recensuit. Thomas H. Candy, B.D. Fscp. 8vo, hf. bd., pp. 594. *Rivingtons.* 4s. 6d.

WESTCOTT (Brooke Foss, B.D.). General Survey of the History of the Canon of the New Testament. 2nd Edition. Cr. 8vo, pp. xxiv.—535. *Macmillan.* 10s. 6d.

WHARTON (Grace and Philip). Queens of Society. Illustrated. 3rd Edition. Post 8vo, pp. xvi.—575. *Routledge.* 5s.

WINNALL'S Coal Dealers' Ready Reckoner, Showing the Value of any Quantity of Coal, from ¼ of cwt. to 3 tons; at 2s. 6d. to 19s. 6d. per ton. 12mo, cl. sd. *Winnall* (Birmingham); *Simpkin.* 1s.

CORRESPONDENCE.

CELTS IN IRELAND.

To the Editor of THE READER.

Sir,—Will you allow me to correct a mistake that seems to be prevalent on your side of the Channel? Mr. Beddoe, in an extract reported in the *Reader* for September 8, seems to consider that the true Celts are to be found in Connaught, and the *Times*, in a recent article on Ireland, talks of the true Celts of Connaught; while in fact there is very little Celtic blood in the veins of any Connaughtman. The De Burgos, Burkes, Blakes, Lynches, Joyces, Martins, D'Arcys, Bodkins, Frenches, Jennings, Benninghams, Binghams, &c., are all foreign blood, and anyone interested in the subject can find the exact date of their introduction in Mr. Hardiman's "History of Galway" or in his notes on "O'Flaherty's History of I-ar-Connaught." The Welshes, Naughtons, Eyers, Seymours, Bourkes, Wynnes, &c., are modern, being principally Williamites.

The true Celts are the O'Fflaherties, or O'Flahertys, Kirwans, Athys, O'Halerans, Dalys, McDermots, Cooneys, &c., who are few compared with the foreigners.

In some of the islands off Connaught, and in very remote portions of that province, the blood is more untainted than elsewhere, but these colonies are so small that they are not worth consideration. The purest Celts to be found in Ireland are in the west part of Munster (the mountainous district of Cork and Kerry) and the west part of Ulster (Donegal and thereabouts), and even in these places there is much foreign blood.

G. H. K.

Oughterard, Ireland, Sept. 9, 1866.

DOES DARWINISM FAVOUR THE "MONOGENIST THEORY AS TO THE ORIGIN OF MAN?"

To the Editor of THE READER.

Sir,—Will you allow your columns to open to this question, as it seems at present involved in some mistiness, which a little explanation from some advocate of the theory might clear up?

Are we to understand by the monogenist theory the proposition that all varieties of the human race are descended, not only from one species of pre-existent beings, but from one individual of that species?

To compare men with pigeons. Naturalists believe that all sorts of domestic pigeons are descended from the wild rock-pigeon. This seems to mean that the rock-pigeon was established as a species before the domestic breeds began to appear. Now, are we to understand that one single rock-pigeon was the ancestor of all varieties of domestic pigeons? or may we with equal probability assume that several rock-pigeons produced at divers times and places progeny varying by slightly divergent characteristics, and that these varieties, being perpetuated by selection, produced the distinct breeds we now possess? One wild bird may have been the ancestor of all the fantails, another of all the carriers, and so on. Thus domestic pigeons may be said to be "monogenous" as to their origin from one wild species, "polygenous" as to the individual ancestor of each variety.

Now, does the Darwinian theory favour the view that all men are descended from a single pair of human progenitors, who may have been brother and sister, but whose parents were not strictly human? We have heard so much of the remarkable manner in which people contrive to misrepresent or misapprehend this theory, that one is naturally extremely diffident in forming an opinion; but it does seem that it requires us to believe the transmutation of species to have been a very slow process, carried on by gradations insensible at each step in the progression. Thus, let us compare London of to-day with London at the Norman Conquest. What a great change has taken place in the aspect of the city and the habits and ideas of the inhabitants since that period! Yet this change has been effected during an uninterrupted succession of days, each of which was as like the preceding as London life of to-day is like that of yesterday. We could not point to any single interval of twenty-four hours, and say, "Here mediæval days ended, and modern times began."

During a lifetime of fourscore years a human being passes through stages of mental development marked by characteristics as strikingly different as the capacities of brutes and men; yet the change is effected through a succession of hours, at no one of which we could detect any difference in mental powers between his condition at that and the preceding hour.

So, could we pass in review all the generations occupied in the transmutation into human beings of the pre-existing form whence man is supposed to be derived, it seems most likely that we could find no perceptible change at any point in the scale, but that the children of each generation would be as like their parents as the children of the present day are like their fathers and mothers.

It seems, therefore, if we are to accept Mr. Darwin's theory, that the "First Parents" of the human race must be personages altogether mythical, and speculations whether there were one or more pairs of them to be devoid of meaning. So far from this theory favouring either disputant in the much-vexed question between polygenists and monogenists, it seems to sweep both combatants out of the field, and to annihilate the voice of contention by doing away with the conception on which the dispute is founded—viz., that there ever existed on the face of the earth one or more pairs of beings whose origin was exceptional to the natural order of generation, and from whom all men are descended.

For this idea the Darwinian theory seems to substitute the belief that the human species was produced by insensible gradation from some pre-existing form, and that there was no special time for the origin of mankind.

If, therefore, the theory be accepted, we must place the notion of "first parents" of the human race, and all disputes connected therewith, in the same list of superseded conception as cataclysms in geology, and other breaks in the "continuity" of the chains of organized beings.

September 11, 1866. L. E. B.

BELGIAN BONE-CAVES.

To the Editor of THE READER.

Sir,—We are charged by "F. G. S." with "disingenuous" and "underhand" conduct, with "breach of faith," and with publishing "a garbled and untrue version of facts," and all this garnished with an array of insolent epithets and inuendoes which set at defiance all the recognized amenities of controversy, and all those considerations of forbearance which ought to prevail with any man when writing of others who are strangers to him. The facts are these: We went to Dinant, "dilettanti" if you please, not "vaguely and purposelessly," but with the express intention of bringing to bear upon the phenomena of the Lesse valley an acquaintance by no means small with similar phenomena in England and Wales. We had the advantage of seeing the caves under the guidance of Dr. Dupont, who made no secret of his views concerning them, but so far from publishing those views, the opinions expressed by us—be they right or wrong—are founded upon our own observations of the physical character of the valley and of the cave deposits, which are certainly not those expressed by Dr. Dupont. We are, therefore, guilty of no breach of confidence, nor are any other of the epithets used by "F. G. S." in any way applicable to us. It is a matter of surprise, after the depreciatory, not to say contemptuous, terms in which "F. G. S." refers to our scientific qualifications, that he should have thought it worth while to notice the paper read by us to the Cotswold Naturalists' Field Club, a mere sketch of our experiences among the Belgian Bone Caves, and in no way pretending to the distinction of a scientific document, which the indignant strictures of "F. G. S." would seem to attribute to it. "F. G. S." has thought fit to publish an offensive attack upon two strangers, of which he ought to feel ashamed, the more so, as having availed himself of the security of a pseudonym, he was bound by all the laws of honour to be scrupulously observant of the terms employed by him.

We must decline any further notice of "F. G. S." or his communications. Should he, however, be desirous of making further comments upon us in the columns of THE READER, we hope that he will have the manliness to append his name.—We have the honour to subscribe ourselves, Sir, your obedient, humble servants,

W. V. GUISE,
Elmore Court, Gloucestershire.
W. S. SYMONDS,
Pendock Rectory.

September 12, 1866.

SCIENCE.

BRITISH ASSOCIATION.

*Report on the Transmission of Sound through Water.**

The Fog-signal Committee, consisting of the Rev. Dr. Robinson, Professor Wheatstone, Dr. Gladstone, and Professor Hennessy, had been requested to perform experiments on the transmission of sounds under water, in the hope that these might be made available for signalling dangers or communicating between ships in foggy weather. The Committee had first repeated some of M. Colloden's experiments, and had found that the noise of a blow was indeed transmitted to a great distance as a sharp tick. The best results were obtained by means of cylindrical bars of steel suspended from their nodal points, and struck with a hammer at the end so as to excite them longitudinally. An ear-trumpet, across the mouth of which was stretched a diaphragm of Indian rubber, was employed for listening under the surface of the water. The syren, whistles, organ-pipes, &c., make powerful musical sounds under water in a confined vessel such as a tub, but in large reservoirs it was found that these musical sounds are totally extinguished at a short distance from their origin. Thus it is hopeless to employ these for signalling; but as the striking of different bars give sounds of different pitch, and this can be recognized at a great distance, the means may be thus obtained for a telegraphic alphabet. There are few sounds under water which would interfere with the use of such signals; those made in the air are not communicated to the water, even the striking of the paddle-wheels of a steamer is heard but little; yet, on the other hand, the rattling of the stones when waves break on the shingle is audible at a great distance. These experiments were made in the large water-trough of the Polytechnic Institution, in the ornamental waters of the Regents Park, in the River Thames, and by Dr. Gladstone, in the sea at Eastbourne. Professor Hennessy offers to undertake further experiments on signalling in extensive spaces at sea.

Report of the Committee of the British Association on Scientific Evidence in Courts of Law.†

In the year 1862 a committee of this association recommended that "by a legislative act judges should be empowered, on application from a suitor, in causes of a technical character, to convene skilled assessors, the number of whom should not exceed three, and who should give their opinions truly, on the statements of the witnesses, in such manner as they shall be required by the judge previous to his adjudication of the cause." No legislative action has, however, as yet been taken upon this recommendation. It is admitted that the character and functions of one class of witnesses have of late years undergone an important development which has removed them from the position of ordinary witnesses. Yet no provision has as yet been made for this alteration, and the new witnesses are, in the eyes of the law, still like other witnesses. These new witnesses may be described as active witnesses—for the novelty in their functions consists in the practice of collecting, by active exertions, parts which are favourable to one conclusion upon the question at issue, and even making experimental researches for the discovery of new facts which may be favourable to that side.

An impartial witness goes into court to depose to such facts as he may know pertaining to the question under investigation, and he is bound to state those facts in as accurate and straightforward a manner as possible, and to

* This Report was read, in Section A, by Professor Wheatstone.

† This report was read by Professor A. W. Williamson, in Section F.

avoid shaping his statements with a view of promoting one conclusion or verdict more than another. But an active witness, when he undertakes to give evidence upon any question, need not be possessed of any specific information bearing upon the question at issue. He receives statements and information from persons who are interested in a particular conclusion, and he receives no opposition from the opposite party. But with his mind thus prepared with facts on one side of the question, he frequently sets to work to verify these facts experimentally, or to find new facts bearing upon the question at issue. His opportunities of collecting facts for the trial are one-sided, and his facts are mainly in favour of one particular view of the case—the view which he has been employed to support. So well is this partiality of the evidence of scientific witnesses felt and acknowledged, that the more conscientious witnesses, and probably most scientific witnesses, would decline to give evidence at the request of a party whose case they considered unjust. They know that their efforts would tend to increase his chances of success, and they decline to promote a cause which they consider unjust. By thus acting these conscientious witnesses usurp the functions of the judge, for they decide the case in their own minds, and either strive to carry out what they consider a just conclusion, or refuse to aid what they consider an unjust one. If his position in a trial were not of a necessity one-sided, and if he did not consider himself bound to support the side upon which he is employed, a scientific or active witness would have no motive for passing an opinion upon the subject at issue before consenting to give evidence. His very solution of what seems the true end is a proof that he is aware of being necessarily partial. With our present procedure every scientific witness must either allow chance to decide which side he will aid by his exertions, or else he must prejudge in his own mind the question at issue, and then strive to carry out this verdict by exerting his energies on behalf of the conclusion which he considers true. He is compelled to be a partizan, and tries to avoid being the partizan of falsehood. Among the various remedies which suggest themselves, further evils too have received particular attention from your committee. One remedy would consist in the appointment by the judge of some scientific witnesses in addition to the witnesses engaged by each party respectively in the suit. These judicial witnesses would hear the evidence adduced on each side ; they would be empowered to require the witnesses on each side to show them the experimental or other proofs of their statements, and they would report to the court all corrections of statements made by the partial witnesses which they may deem requisite, as well as all other facts of which they may be cognizant bearing on the question at issue. The functions of these judicial witnesses would, however, be confined to particulars of evidence. They would have no concern with questions of law, and would accordingly be precluded from summing up the particulars of evidence in view of any conclusion unless called upon by the judge so to sum up any part of the evidence. The presence of these judicial witnesses could not fail to act as a check upon the statement of partial witnesses. The other remedy would consist in the appointment by the judge of assessors competent to advise him respecting the evidence adduced by the ordinary witnesses. The committee is of opinion that the vast extension which has taken place of late years of national knowledge, and the corresponding development of manufacturing progress, has necessitated in courts of law men cognizant of the principles involved in any processes under consideration, and skilled in the art of eliciting information upon them by experiment, but that the action of these partial inventing witnesses requires some check of this kind above described. They trust that the Legislature may give to the subject the attention commensurate with its interest and importance.

Mr. EDWIN HILL asked if the Committee considered the propriety or necessity of having both judicial witnesses and assessors, and

Professor WILLIAMSON said that in Holland there were assessors of the kind proposed.

Mr. F. FELLOWS suggested the analogies furnished by Trinity Masters sitting as assessors in marine cases, and matters of complicated accounts being referred by judges to accountants. In cases relating to chemical and mechanical inventions, it was hardly possible for a legal professor to understand all that was involved.

It was stated that in Denmark courts were appealed to only to decide legal questions after other questions had been decided by experts.

Professor MILLER pointed out the importance of maintaining the distinction between matters of fact and the inferences deducible from them, and suggested that, as the Association could only state the difficulty of the question, it should be referred to a Parliamentary committee, to consider its practical solution.

Mr. J. P. HEYWOOD moved, Professor WILLIAMSON seconded, and the Section adopted the following resolution :—

"That the Parliamentary Committee and the British Association be requested to assist in carrying out improvements in the present mode of obtaining scientific evidence in courts of law."

Section A.—MATHEMATICAL AND PHYSICAL SCIENCE.

On the Electrical and Mechanical Properties of Hooper's India-rubber for Submarine Cables, by William Hooper.

The author, after describing the method by which he secures the durability of India-rubber, referred to several lengths of his insulated wire supplied to the Government. The great superiority of this wire over gutta-percha may be gathered from the fact that the contract stipulations were for thirty times better insulation than the best gutta-percha. It far exceeds the stipulated degree of insulation. The advantages of high degrees of insulation are the facilities offered for detecting minute flaws or defects. A process was described by which this could easily be performed. Experiments were made by Sir Charles Bright on a length, which, after being exposed to most trying conditions for three years, had increased about 33 per cent. in insulation. He supplied to Captain Mallock, for further experiments in India, a length made in 1862, which had been in use in his factory for two years, exposed to the sun and weather. This length, notwithstanding its early date of manufacture, is at 75° Fahr. three times better than the very best gutta-percha. The details of an interesting series of experiments were given, and the results graphically represented, from which the laws affecting the increase or decrease of resistance were discovered. The best gutta-percha, at the temperature of 100°, is only one half as good as Mr. Hooper's wire when placed in boiling water ; and at the temperature of 160° Fahr. Mr. Hooper's wire is equal to gutta-percha at 60° Fahr. The constant ratio between the resistances of Mr. Hooper's wire at different temperatures establishes the fact that no injury can result to his insulator from any elevation of temperature, and as gutta-percha becomes practically useless at 100°, the wire manufactured by Mr. Hooper is eminently suited for warm climates. Mr. Latimer Clark, the Government engineer, has considered it unnecessary to ship Mr. Hooper's cables in water tanks, and the Ceylon cable, now *en route*, is coiled dry. Such practice would be highly dangerous with gutta-percha cables, as was illustrated in the Malta-Alexandria cable. Mr. Hooper has determined the inductive capacity of his insulator for different temperatures to 212° Fahr., and extended his experiments on the resistance of copper to the same temperature. The insulating properties of this wire were not impaired by any of the ordeals to which he submitted it. Its inductive capacity remains practically the same at all temperatures, while that of gutta-percha increases considerably at 100° Fahr. Diagrams representing the pressure and immersion were shown, from which it was seen that pressure improves the insulation of his wire in the same way as is observed by gutta-percha. The result of carefully-conducted experiments, extending over three years, proves that the absorption of water is so small that the most refined electrical tests failed to discover it. Its low induction offers the following points of commercial interest : 1st, it would be possible to construct an Atlantic core, giving precisely the same speed as the present gutta-percha, for 75,000*l.* less ; secondly, by using similar proportions, the yearly income arising from an Atlantic cable may be increased about 200,000*l.*, and that for every increase made in the rate of transmission through the present cable, a corresponding increase can be attained with Mr. Hooper's core, without further cost. Mr. Varley shows that a cable of gutta-percha, if only just able to pay the working expenses, would, if replaced with Mr. Hooper's core, pay a dividend equal to 37 per cent. of the working expenses, and points to the advantages which would arise from its adoption for laying down the Red Sea, should this line of telegraph be again attempted.

On an Error in the usual Method of Obtaining Meteorological Statistics of the Ocean, by Mr. F. Galton.

The meteorological statistics of the ocean have been hitherto obtained by extracting observations from the logs of different ships, and by sorting those that were made in different geographical divisions of the ocean into corresponding groups. The usual geographical divisions are bounded by each fifth degree of latitude and longitude. They, therefore, are 300 miles in length, and have an average breadth of 150 miles. Each of the groups is treated as if it were composed of observations taken at irregular periods, by a single person, stationed at a fixed observatory in the centre of the group—that is to say, the mean barometer, thermometer, and other elements are determined by computing the simple mean of all the recorded observations. The proportion of winds that blow to the different points of the compass is computed in a similar manner. Only one limitation is exacted in respect to the admission of an observation into a group. It is, that it should not have been made at an interval of less than eight hours from any other observation made by the same ship already included in the group. Were it not for this limitation, a zealous observer might contribute hourly or yet more frequent observations, which, by their multitude, would prevent the scantier observations of other ships from having a just influence on the general average. In an extreme case of this description, the weather met with by a single ship, on one particular voyage, might mainly govern the computed results. In a recent report on the condition of the Meteorological Department of the Board of Trade, by Mr. Farrer, Captain Evans, and the author, they had pointed out many objections to the existing methods of computing ocean statistics. The object of the present paper was to draw attention to yet another objection, and to show that an additional limitation is required before an observation ought to be admitted into a group. The objection the author made was, that the observations of a sailing ship are more numerous in respect to antagonistic winds or calms than in respect to favourable weather. Therefore, as some parts of the ocean are mainly frequented by outward-bound, and others by homeward-bound ships, the means of the recorded observations in those squares must differ materially from the true average weather. When favourable winds are blowing, a ship is rapidly wafted across the area of observation, and comparatively few observations are made within it. The wind may continue blowing, but the ship is unable to record its continuance after it has left the area in question. On the other hand, if an antagonistic wind blows, or if calms or light breezes prevail, then the ship is delayed within the area and continues making observations during the whole or nearly the whole period of their continuance. The author's objection would be of little consequence if the areas into which the ocean is divided for the purposes of meteorology were so large that no ship could cross them without experiencing frequent changes of wind. But this is by no means the case in the five-degree squares. Even if a ship's course lay along the diagonal of an average "square," the length of passage within it would be only 335 miles, and would be traversed in less than five eight-hourly periods with a favourable wind. Taking one course with another across the square, some cutting through a mere corner of it, some crossing it lengthways and some breadthways, an average of three eight-hourly periods, or one day, would be an ample estimate. Now in the ocean regions of variable winds, the changes of the wind are, on the average, much less frequent than once in a day. We might fairly estimate them as lasting in the same quadrant for an average of not less than three days, or nine eight-hourly periods, at a time. The length of time during which ships are windbound in the English Channel, where the changes are unusually rapid, confirms this rough estimate. On this hypothesis, a favourable wind would, on an average, be recorded three times by a ship sailing across a five-degree square, and an unfavourable wind or a calm of the same real duration would be recorded nine times ; therefore the observations contributed by a ship resemble observations made at a fixed observatory under instructions that only three eight-hourly observations were to be taken during the continuance of winds, say, from the northerly quadrant, but that when the wind was in the southerly quadrant the observations were to be continued during the whole of its duration. No one would

be inclined to accept the means of these observations as a just statement of the weather, yet this is precisely what is given by the method of compilation adopted by the Meteorological Department. The weather under which a ship enters a square may be of any description whatever, except that of an absolute calm in a sea without a current; therefore it has no bearing on the present question. It must further be observed, that the error pointed out not only affects the winds, but it affects all the meteorological elements so far as they are correlated with the winds; the temperature and dampness are especially affected by it. The method the author proposed, by which this error may be obviated in future work, is to impose a limitation to the observations received, in respect to interval in distance, in addition to the existing eight-hourly interval in respect to time. He proposed that observations should not be included in the groups, unless the places where they were made were at least as far asunder, *measured in the direction of the ship's general course* (and not counting tacks), as she could traverse with a favourable wind in eight hours. Thus on an average not more than three observations would be accepted from a single log-book in any five-degree ocean square. He did not possess data to show how far the accuracy of the existing wind-charts is impaired by the neglect of this cause of error; but he presumed it was only in certain parts of the ocean that it would exercise considerable influence. It is sufficient that he should point it out as one to be guarded against for the future; for he trusted that the whole of the work in the Meteorological Office would be submitted to re-computation, and an improved method of handling and grouping the observations would be adopted, in accordance with the recommendations of that Report to which he had already alluded.

Section B.—Chemical Science.

On the Refraction- and Dispersion-equivalents of Chlorine, Bromine, and Iodine, by Dr. J. H. Gladstone.

The author defined the term "refraction-equivalent" as the product of the atomic weight of any substance with its "specific refractive energy," that is, its refractive index minus unity divided by its density. He defined "dispersion-equivalent" as the difference between the refraction-equivalents as reckoned for the fixed lines of the spectrum A and H.

The refraction-equivalent of chlorine as a gas, or in a gaseous condition, was given as 8·7; while in several of its organic compounds it ranged from 9·6 to 10·0. Liquid bromine gave 16·6; its compounds with carbon and hydrogen about 15·5. Iodine in combination gave 24·2. The following table is deduced from organic compounds of the vinic group, and shows that bromine is intermediate between chlorine and iodine in its effect upon light, as in other properties :—

	Chlorine.	Bromine.	Iodine.
Refraction-equivalent	9·8 ...	15·5 ...	24·2
Dispersion-equivalent	0·5 ...	1·3 ...	2·6

This section re-assembled at the School of Art, under the presidency of Mr. Bence Jones, and at the time of meeting (eleven o'clock) there was a very large attendance.

On the Magnesium Lamp, by Mr. H. Larkin.

Mr. Larkin first gave a brief history of magnesium, from the time when it was first introduced to the notice of the public by Sir Humphrey Davy to the present time. A company had been formed in Manchester for the production and supply of magnesium, and two beautiful specimens of the metal produced by it were exhibited. The next question was, whether it could be practically applied to purposes of illumination. Several arrangements had been devised, more or less ingenious, to burn the metal in the form of wire or ribbon; but the great difficulty in all such arrangements had been, that it required clockwork to feed it forward. In order to avoid this difficulty, Mr. Larkin, after many trials, failures, and partial successes, had succeeded in constructing a magnesium lamp, a specimen of which was fixed up in the room, of which we give a description. The distinguishing peculiarity of these lamps is, that they burn magnesium in the form of powder, instead of ribbon or wire; and that they do not depend on clockwork or any similar extraneous motive power for their ac ion. The metallic power is contained in a large reservoir, having a small orifice at the botto m, through which the powder falls simply by its own gravity, like sand in an hour-glass. In order that a sufficient orifice may be used, and to facilitate the steady flow of the powder, it is mixed with a quantity of fine sand or other diluting materal, the proportion of powder to sand being varied according to the amount of light required. After leaving the orifice of the reservoir the stream of metallic powder and sand falls freely through a metal tube, into the upper end of which a small stream of ordinary gas is also introduced. The mingled streams of powder and of gas thus flow down the tube and escape together at its mouth, where they are ignited, and continue burning with a brilliant flame as long as the supply of gas and metal is maintained. As the metal becomes consumed, the sand with which it was mixed falls harmless into a receptacle provided for it, while the fumes are entirely carried away by a small tube-chimney into the outer atmosphere. Immediately below the orifice there is a valve to either regulate the quantity or entirely arrest the flow of the metallic powder, which valve may be opened and shut at pleasure. When it is desired to light the lamp, the gas is first turned on, just sufficiently to produce a very small jet at the mouth of the tube, which small jet being once kindled may be allowed to burn any convenient time, until the moment the magnesium light is required. All that is then needed is to turn on the metallic powder which instantly descends and becomes ignited as it passes through the burning gas. This action of turning on and off the metallic powder, may be repeated without putting out the gas, as often and as quickly as desired; so that, in addition to the ordinary purposes to which lamps are applied, an instant or an intermittent light of great brilliancy, suitable for signals or for light-houses, may be very simply produced with certainty of effect, and without the smallest waste of metal. Mr. Larkin explained that the lamp could be made to suspend from the roof, in place of an ordinary gas sun-light, and arrangements could also be made for its use in signals and for lighthouses. The greatest difficulty was the price of the metal, but only about four years had elapsed since the production of the metal in any quantity by Mr. Sonstadt, and the demand for it hitherto had been a fancy one. The company at Manchester would shortly be able to produce it at a proper commercial price. Mr. Larkin said that the cost of burning magnesium in the lamp which he exhibited would, at its present price, be about 1*l.* an hour, and that no difficulty whatever was experienced in reducing the magnesium to powder.

Section C.—Geology.

On the Occurrence of Felis Lynx as a British Fossil, by Dr. Ransom.

In consequence of the discovery of remains of the Mammoth and other Pleistocene animals in a fissure in Pleasley Vale, on the borders of Nottinghamshire and Derbyshire, the author requested Mr. W. Stephenson, a zealous member of the Naturalists' Society, to make inquiries on the spot as to the existence of other fissures or caves, in the hope that some human trace might be met with. Mr. Stephenson visited the cave marked in the map as the Yew-tree Cave, and found fossil bones in September, 1864, and soon after led an excursion of the society to explore it more fully, when more bones were met with. I visited it in May, 1865, and we then also explored the caves marked on the map as Digby's Cave and New Cave, and more fossil bones were brought home.

These scattered caves are fissures in the Permian rocks, and pass through the whole thickness of the magnesian limestone, and an unknown distance into the lower red sandstone beneath it.

They are not perceptibly water-worn in their interior, although a little drainage has passed through them; the rain of a very limited area, percolating through the surface, has coated the floor, walls, and roof with a thin layer of stalagmite and stalactite, and has washed away a little soil. The angular surfaces of the opposing walls, however, still correspond, and there are no opposing concave surfaces such as are seen in caves through which underground currents of some strength have long exercised their denuding power.

Strictly speaking, these fissures have neither roof nor floor. The former is represented by huge, fallen, and impacted angular masses of stone, and the latter is similarly formed, so that the space in which the explorer works is but a chink between fallen fragments. Not only the depth, but also the longitudinal extension of the fissure is unknown, as the fallen rubbish has choked up the passages.

The Yew-tree Cave is entered by a narrow opening, large enough for one person to creep through. The descent is a series of inclines and sudden falls, which require the help of a rope or long pole. The total depth is about 70 feet, and the length about 100 feet (of the part explored). It is everywhere narrow, and in some places so much so, that only a person of moderate obesity can pass. I was obliged to move sideways.

The mud which fills the interstices between the angular blocks at the floor of the cave is red loam, and interspersed with small fragments of the stalagmite. No rolled stones were found, and no transported ones. Here and there the mud was hardened by infiltration with carbonate of lime. This was particularly the case with that which lay upon the projecting ledges of the walls. The osseous remains were found imbedded in the red loam, and were best preserved when it was infiltrated with carbonate of lime. In some parts the bones were very friable and fell to pieces on the slightest attempt to remove them. The number of fragments of bones in parts was so great as to form a large proportion of the mud. The bones were not found rolled or worn. They were much broken in some parts of the cave, not in others, and on the whole not more so than might be easily accounted for by the falling of stone, by which means also the stalagmite was broken. Only one bone was found which appeared to show marks of teeth.

Among those brought home from the first excursion, my attention was at once arrested by a lower jaw of a species of Felis, which approached in size that of a small leopard, and which, judging from the figure of a single tooth in Owen's "British Fossil Mammalia," I thought might possibly be *Felis pardoides.* However, having neither the necessary standards of comparison within reach, nor the familiarity with the subject sufficient to enable me to form a confident opinion, I placed the jaw in Professor Owen's hands, who kindly submitted it to a very careful scrutiny, and decided it to be that of *Felis lynx* (Variety Cervaria), a north Asiatic animal—a fossil new to Britain, and, I trust, of sufficient interest to geologists to excuse this intrusion on the time of the section.

Among the bones was a portion of a skull, which, I believe, belongs to the jaw, but I could not make out with certainty that they were found lying together.

A number of jaws of wolf, and one which I take to be that of a fox, were found, also numerous long bones and jaws of small (roe-deer) ruminants, part of the skull and lower jaws of a pig, several jaws of the water vole, and a still larger number which I have not yet determined, and which I shall be very happy to place at the disposal of members of the section who are interested in the matter for examination.

How the bones got there it is not easy to say. There were few or no indications of the cave having been a den of wild animals, although it is possible that the expanded portion near the mouth may have been so used at some time. In that case, the bones found in the deeper parts must have been those which had been washed or fallen down, or of animals which had run down in the ardour of the chase, as the steep part of the fissure could not, I feel sure, be ascended again by any animal which had once gone down. This was illustrated by our finding the almost entire skeleton of a dog in the deepest part of the cave, so recent that the pupa cases of the flesh fly were still found perfect; and similarly in the new cave, which is shaped so as to form a capital live trap, I found great numbers of rabbits' bones, and hares' bones, in each case clustered and lying together as the animals died.

No confident opinion, founded on the condition of the bones on the floor of the cave could be formed as to their relative age, as the dribbling of water through the loose stones of the floor carries away and displaces the mud and objects imbedded in it.

The President (Professor Ramsay) said the discovery of the fossil was a matter of importance, and he should be glad to hear observations on so valuable a paper.

Professor Phillips remarked that the paper made a positive addition to the list of Pleistocene fossils; but the point of interest was not merely the discovery of a new animal—it had a close bearing on the great question of the distribution of temperature. For his own part, he was disposed to accept the conclusion that they must not cling too closely to the very limited range laid down for the distribution of quadrupeds. Other evidences of climate, furnished by the presence of insects and shells in the fossil deposits, must not be overlooked. Shells of the same kind as now existed were found with the bones of larger animals, which was of value as proofs of temperature. All the evidence, he

thought, pointed to the necessity for admitting that the power of range by quadrupeds was larger than had been thought.

In answer to a question, Dr. RANSOM said, speaking generally, he used the word "Pleistocene" in the sense Sir Charles Lyell did.

The PRESIDENT remarked that the bone produced did not appear to him to be very old—it looked comparatively fresh—not of greater age than some of the wolves which had been found, which they knew had lived down to modern times. This lynx, therefore, might have existed at a recent period indeed, and have seen man.

Mr. WYATT said his opinion was that the jaw now exhibited was not of the same period as the bones of the Pachyderms referred to in the paper. and this specimen alone would scarcely be accepted as sufficient to establish *Felis lynx* as a British species.

On a Curious Lode or Mineral Vein in New Rosewarne Mine, Gwinear, Cornwall, by C. Le Neve Foster, B.A., D.Sc., F.G.S.

The lode or vein was said to be chiefly remarkable as being a brecciated lode containing rounded pebbles. After referring to cases of somewhat similar lodes mentioned by Werner, Carne, and Mr. John Rule, the author proceeded to describe the peculiarities of the lode. The north part is mainly a copper lode, the south part a tin lode. The tin lode or vein consists of fragments of the surrounding rocks, mainly a hard shale or "killas," cemented by quartz, tinstone, chlorite, and other minerals. Among the fragments found in the lode are rounded pebbles of killas and elvan (quartzo-felspathic porphyry), besides pieces of a breccia made up of small fragments of killas. From these facts the author was led to infer six periods in the formation of the lode; he supposed that the copper-bearing part was formed subsequently to that which contains tin. With regard to the pebbles, he supposed that the fissure or crack happened to open underneath a bed of gravel or shingle, and that the pebbles fell down. The last part of the paper contained an account of some of the minerals found in the mine, with an attempt to determine the order of their introduction.

Section D.—BIOLOGY.

On the Teaching of Natural Science in Public Schools. By the Rev. F. W. Farrar.

The author referred to the indifference and neglect till recently manifested by our public schools towards science, the result of which had been that nearly all the great discoveries had been made by men who had not been educated there. The study of the classics did not call forth the powers of observation, and many important discoveries were due simply to men walking about with their eyes open. Public schools ought to afford some opportunity of acquiring a knowledge of science, and it was impossible to conceive how much might have been added to the sum of human knowledge, if our soldiers, sailors, merchants, &c., had been able to chronicle what they observed; and how many had become the dupes of table-turners and spirit-rappers from a want of the knowledge of the elements of science. As to the want of time, he admitted that English boys could not have imposed on them the same amount of study as German boys, and that it was not desirable to risk the loss of health, nor should a classical education be superseded. Some attention was now given to science in our public schools, but obstacles were experienced, owing to the want of any definite scheme, and to the disagreement of scientific men as to what branches of study should be pursued. There was also a great want of good scientific books adapted for schools, and he suggested that a committee of the Association should be appointed to draw up a practical scheme of scientific education. After noticing with commendation the plan adopted at Marlborough, and referring to the voluntary system existing at Rugby, and the compulsory study of science at Harrow, the paper went on to recommend that these two systems should be combined, that the widest scope should be given for voluntary individual exertion, that every school should be provided with a scientific library, laboratory, machines, diagrams, and geological, botanical, and other collections, partly formed by the exertions of the boys themselves, and that there should be a special teacher to conduct a class, and to whom the boys might refer for explanation and advice.

Lord AMBERLEY trusted that Mr. Farrar, as the master of a classical school, would have great influence in introducing scientific instruction in our public schools. As to the question of time, he quite agreed with Mr. Farrar in thinking it most undesirable to increase the labour of the boys in any way that might be prejudicial to health. He thought that if the hours given to Latin verse-making could be applied to science, the difficulty as to time would be surmounted. He believed that if the masters were really desirous of introducing scientific teaching, and if they acted in the same spirit as Mr. Farrar, the difficulties would soon disappear.

Mr. WILKINS suggested that the Universities should require some knowledge of science as a qualification for a degree.

On the Variation of Arterial Vessels, by Dr. G. D. Gibb.

The author illustrated the subject by two examples. In the first, the large vessel rising from the heart, called the aorta, gave four branches, instead of the usual three, the right carotid and the subclavian, both rising by a distinct and separate trunk, there being necessarily an absence of the innominate artery. In this curious case there was an irregularity in the division of both femoral arteries and in the left sciatic nerve. In the second example, the aorta divided into two great branches; the first of which subdivided into the usual innominate and the left carotid, which crossed the windpipe to the left side. The second branch divided into the left carotid and descending aorta. With regard to the first example, it had occasionally been met with by anatomists, but the second the author considered unique, the most experienced observers having failed to record anything similar. He considered this variation in the larger blood-vessels as a deviation from the standard or well-recognized ordinary type, and to some extent a precursor of similar conditions in the lower animals. Their occurrence, however, could not be determined during life, nor could any special deduction at present be drawn from them. In the first example, the blood-vessels of the extremities had become converted into what might be popularly called cylinders of bone, examples of which were submitted to the section.—The paper was freely illustrated with diagrams.

On the Ballast Flora of the Coasts of Durham and Northumberland, by John Hogg, M.A., F.R.S., F.L.S.

The author in his account of the plants which have been imported with ballast by ships on the coast of Durham and Northumberland, limited himself to the sea coast, and more especially to the banks of the rivers Tees, Wear, and Tyne. The lists of the many species were divided into *two* heads—viz.: 1, *Exotics*, or plants *foreign* to our island; and 2, The *rarer indigenous*, or naturalized, species of Great Britain, which were rarely if ever seen in the before-named districts. The number of plants enumerated amounts to near 200, which includes those discovered by other botanists, who resided near the localities mentioned during many years past. Of these, 69 species are *exotics*, and come within the *First* Division; whilst 124 species are referred to the *Second* Division. The ballast of the localities specified is chiefly chalk with flints; and, consequently, a great number of plants which grow naturally in cretaceous formations is there found. It was noticed that the exotics and more tender species flourish for two or three years, but that they perish either by the frost of the first hard winter, or by the cutting east winds in the spring; and several sorts of British plants that were rarely if ever seen before the railways were made, have been conveyed with shingle along the lines of railway, and so have now become established. The ordinary common species of the district have not as yet suffered any decrease or injury from the imported plants. It was also remarked that after the ballast had been deposited for a short time, *annuals* mostly sprung up, but after two or three years, they gave way to a variety of *perennials*, which succeeded them. Mr. Hogg added to his paper several lists of plants which he had carefully prepared.

Section D.—DEPARTMENT OF PHYSIOLOGY.

On the Effects of the Pollution of Rivers, by Colonel Sir J. E. Alexander.

From the time of the author's return from New Zealand, some three years ago, he had, as a magistrate and in other capacities, paid great attention to the state of the rivers of our country; and he had been surprised to see the pollution of our streams proceed unchecked. When he attempted to interfere, he was told that he wanted to check the progress of our trades and manufactures; he thought, however, that manufacturers had a duty to perform to the public in trying to prevent the poisoning of our streams, and the wholesale destruction of fish. In Scotland the once beautiful Severn, issuing from Loch Lomond, was now turbid with Turkey dye and sewage. Earl Selkirk told him that the Avon at Linlithgow was scoured of its fish for the sake of one petroleum works. Of many rivers even cattle could not drink, fish could not live, nor could use be made of the water at all. The dirty, greasy water caused by paper mills to flow into the rivers had the most deleterious effect, and refuse chemicals, such as the strong alkalis used therein, were most hurtful. At one mill 7,530 cwt. of rags were used in 1835, 17,335 cwt. in 1845, and 41,228 cwt. in 1860. In 1861 Esparto-grass was introduced, and the refuse was very hurtful to the fish, getting into their gills. The Esk river, by the latter means, had been polluted, and yet those who worked the mischief appeared to think they had a perfect right to do so, and had defended actions prompted by the Duke of Buccleuch, Viscount Melville, and Sir J. W. Drummond. He remembered the river in 1832 when it was pure, and in 1840 the fish gradually got scarcer until now, when the state of the water was fearful, and diphtheria was prevalent in its course. In another river he had seen quantities of chloride of lime placed by the river side for floods to carry away. Professor Christian, of Edinburgh, had said that the river below the paper mills was full of the fibre of rags held in suspension, and was pervaded with chloride of lime and the refuse of gas works. Measures had been taken in some places to render deleterious compounds harmless before sending them into the rivers. Peat moss taken from land being cleared had also been thrown into the rivers, and the effect was similar to that of the paper fibre; but at Dartmoor a successful attempt had been made to utilize such refuse by forming it into fuel. In conclusion, he observed that a River Pollution Act was absolutely necessary, and he hoped the British Association would endeavour to further its object.

Mr. WHYATT used to be a fisherman in the Scottish rivers, and since the practice of allowing the sewage to flow into them few fish were to be caught. One day there peeped up at him from the water a cod's head, a very unlikely river fish, and soon there came a decomposed ham and a leg of veal in a similar condition. Such filthy matter promoted the growth of those weeds which so greatly impeded navigation.

Dr. MACADAM thought the gallant author had paid more attention to the pollution caused by the products of manufactories than the subject deserved. He remarked upon the injurious effect of sewage in the Esk, and considered that it should be made compulsory for manufacturers and towns generally to convey the sewage and refuse by means of a system of sewerage entirely out of harms way.

Dr. BENNETT said the subject had vested in it several important issues—the public health, the preservation of fish, and agriculture. He denied the accuracy of the popular notion that bad smells were the great cause of ill-health. England presented a spectacle to the world in allowing a practice to continue by which the fish of her rivers were being destroyed, and yet so much trouble could be taken to transport salmon *ova* to Australia. The error he considered was due to the popular notion that it was advantageous at any cost to get rid of sewage and refuse. Exuviæ and excreta of animals were actually essential elements in the great round of animal and vegetable life, and guano, which was nothing but exuviæ, was brought from afar at enormous cost, whilst we took our animal refuse and pushed it into our rivers, there to poison our fish. Cesspools were injurious if they percolated into our wells and drinking water, but the odour was not so baneful as was generally stated. Sewage should be turned from the water toward the land, and thereby, instead of poisoning the streams, fertilize the fields. A great obstacle was, however, placed in the way of this object being accomplished by the susceptibility of landed proprietors to their rights, and those who attempted to carry out the process were indicted for a nuisance. He referred at some length to the project now being carried out of constructing an enormous pipe to carry off the sewage of Edinburgh to the Frith of Forth, which he considered a useless expenditure, whereby a large amount of valuable material in the shape of manure was wasted, as he believed that 10,000*l.* per annum might be realized by the effective recovery of the refuse held in suspension. One enterprising man, who had established a manure works upon the banks of the open drain near Edinburgh, and had for some time manufactured a valuable article of agriculture, had, since the breaking out of the cholera, been convicted of causing a nuisance. No complaints had been made, however, and the health of the public had never suffered. The works were now

stopped. The question of our corn supply was becoming one of great interest. The price was steadily increasing, and he feared it would do so until the expense of living was enormous; he therefore thought they should take time by the forelock, as the question of utilization of the sewage would inevitably be forced upon public notice.

Mr. BEARDMORE briefly defended the action of the authorities of Edinburgh, stating that the utilization of sewage there was impracticable, there being no place in which works extensive enough could be carried on.

DEPARTMENT OF ANTHROPOLOGY.

Skulls from Round Barrows in Dorsetshire, by Mr. C. C. Blake.

These skulls were obtained by Dr. Hunt, the President of the Anthropological Society, from a barrow near Blandford. Dr. Thurnam, in a dissertation on the two principal forms of English and Gaulish skulls, gave a table containing the measurement of twenty-five skulls from the English round barrows. The longest of those exhibited a cephalic index of ·74, and the shortest ·87, the average being ·81; and Dr. Thurnam therefore concluded that the typical character of the skulls found in round barrows was that which presented the brachycephalic type. When the skulls taken from the Blandford barrow were carefully measured, it appeared that the rate of breadth was much smaller than the average of those measured by Dr. Thurnam. Where Dr. Thurnam's lowest breadth was ·74, the lowest of the Blandford skulls was ·66; and where his highest was ·87, the highest of those from Blandford was ·81, the average being in each case respectively ·81 and ·73. If the Blandford skulls (nine in number) were added to Dr. Thurnam's table of twenty-five, the average of the whole thirty-four would be found to be ·77. The distinction between an average of ·81 and ·77 must strike all observers, and some might consider the deduction of 4 per cent. as invalidating many of the general conclusions arrived at by Dr. Thurnam. If Mr. Blake were inclined to base any conclusions on his measurements, he might reverse Dr. Thurnam's "sort of axiom," and say "long barrows, long skulls; round barrows, long skulls too, and sometimes longer." A description of the skulls might follow at another time, and the conclusions he would draw at present were as follows: 1st. That the state of materials at disposal precluded any generalization as to the prevalence of a brachycephalic type of the skull in the round barrows of the south of England. 2nd. That a much larger series of skulls from the round, as well as from the long barrows, must be measured before any conclusion could be arrived at as to the *cranial modulus*.

Dr. HUNT said there had been a large number of round barrows opened in Dorsetshire, and a good many urns had been found, but Anthropology was in such a state that it had not been thought worth while to take care of the skulls. He met with a gentleman who was in possession of some skulls, and prevailed upon him to part with them for the Anthropological Society. The subject of the connexion of the classes of people to whom they owed the round and long barrows found all over Europe had excited great interest. He thought the theory of Dr. Thurnam, that in round barrows there were round skulls, and long skulls in long barrows, was prematurely advanced.

Section E.—GEOGRAPHY AND ETHNOLOGY.

The PRESIDENT (Sir Charles Nicholson), after some introductory remarks, alluded to the discovery of the Lake Albert Nyanza by Sir Samuel Baker, and described the nature of the problem which now remained to be solved in the geography of this part of Africa. This was the connexion or separation of the two great inland seas, the Tanganyika and the Albert Nyanza. The difference of level between them, 800 feet, militated against the supposition of their union; but a doubt existed as to the correctness of the levels given in the case of the Tanganyika, the measurement having been made by Burton and Speke with a single and very imperfect instrument. It was hoped that this point might be settled by Livingstone, the last news from whom informed us of his arrival at the mouth of the Rovuma river on the East Coast, whence he was about to travel by land into the interior. The road to the great southern lake, Nyassa, was reported to be open, and this distinguished and intrepid traveller was, in all probability, now on his march. He also alluded to the expeditions of the Baron von der Decken and M. Du Chaillu. In Asia several very important geographical expeditions had recently been undertaken. Two of these were in connexion with the great trigonometrical survey of India now in course of execution. To Capt. Montgomerie, who had been charged with the survey of Cashmere and the North-Western Himalayas, we were indebted for one of these Central Asian explorations; the other was undertaken by Mr. W. H. Johnson, a civil assistant in the survey. This gentleman, having carried the survey to the summit of the Karakorum Pass, the extreme limit of the territory under British influence, had been there invited by the chief of Khotan, in Chinese Tartary, to visit his dominions. Mr. Johnson had boldly undertaken the journey over the as yet unknown plateau stretching between the Himalayan and Kuen Lun ranges, and reached Ilchi, the capital of Khotan. The plateau was surveyed, and the position of Ilchi accurately determined. The vast plains of Central and Western Asia still presented, however, innumerable features deserving of minute investigation. Amongst these was the problem of the alleged ancient course of the Oxus into the Caspian Sea, instead of the Aral, as at present. In South-Eastern Asia, a young man, Mr. J. Thomson, had recently returned from a successful enterprise in Cambodia. Mr. Thomson had been excited by the account which the late Mr. Mouhot had given of the splendour of the ruins of ancient temples buried in the tropical forests of that country, and alone and unaided had visited them, and brought away photographs and plans of these structures. The useful labours of the Palestine Exploration Fund were next noticed, and afterwards the minute and accurate surveys made by Mr. W. Chandless on the river Purus, in South America, and also the recent expedition into the interior of Australia, undertaken for the purpose of discovering remains of the unfortunate Leichhardt expedition. This search, so munificently supported by several of the Australian governments and by Her Majesty the Queen, had not yet accomplished much. A severe drought had impeded the progress of the searching party, but they had succeeded in traversing the continent to the banks of the Flinders river, and had examined the trees on which the L's were cut at a spot which was supposed to be the last halting-place of the lost explorers. Now that settlements are formed along the whole east coast of Australia, at short distances from each other, it was very desirable that exact registers should be established at various points, so as to determine whether there be any appreciable change in the relative levels of land and water along the coast, and thus throw light on an interesting question in physical geography—namely, the gradual subsidence of the pacific coasts of Australia. After noticing the great extent of unknown lands, especially in Africa and New Guinea, yet remaining to be explored, the President concluded by a review of the recent great strides made in the science of ethnology since the discovery of stone implements in the alluvial deposits of St. Acheul. There was a tendency with many ethnologists in their inquiries to disparge the force of the evidence afforded by language as a key to the history and the relationship of the different sections of mankind to each other. Yet it was impossible to gainsay the absolute co-relation that exists between certain organic forms of speech and some of the great typical divisions of man. Language, in his opinion, constitutes one of the most permanent and indelible tests of race, and no system of ethnology could dispense with the aid of philology. The early utterances of man have become stamped with a certain degree of immortality. The Celtic and the Hindoo, the early Persian, the Hellenic and Latin races betray the community of their origin in the dialectic affinities of the tongues they speak. On the bank of the Tigris and the Euphrates the Arab employs a language which is the lineal descendant, with few fundamental changes, of that spoken by his forefathers in the days of the Hebrew patriarchs; whilst in the Semitic names scattered along the shores of the Mediterranean Sea and eastern coast of Africa, we have unerring indications of the progress and settlements of early Semitic tribes. However plastic and evanescent, under certain local conditions, characteristic forms of speech may be, they still afford, in the history of man, the key to many of the vicissitudes that have marked his migrations, his conquests, his religion, his social polity, the measure of many of the attributes by which as an individual or a race he is distinguished from his fellow-men.

On the Physical Geography and Tribes of Western Equatorial Africa, by M. P. B. Du Chaillu.

My object in coming before you is to try to the best of my abilities, to give you a bird's-eye view of the physical geography of the countries I have explored during this last and also during my former journey. There can be now no question that Equatorial Africa, from the West Coast, forms a belt of impenetrable jungle as far as I have been to 13° 30′ E. Long. This jungle did not stop there, but could be seen as far as my eyes could reach, and the natives had never heard where it ended. The breadth of this gigantic forest extends north and south of the equator, probably from two or three degrees on each side, Now and then prairies, looking like islands, are found in the midst of this dark sea of everlasting foliage, and how grateful my eyes met them no one can conceive unless he has lived in such a solitude. At a certain distance from the coast, the mountainous region beyond rises almost parallel with it. This range of mountains seems to gird almost all the West Coast. Between these mountains and the sea the country I have explored is low and marshy, and numerous rivers and streams are found. The low land is alluvial, and has no doubt been formed in the course of time by the washing of a deposit coming from the table-land. Only two rivers seem to pierce through these mountains. These are the Rembo Okanda and the other the Rembo Ngouyai, the one coming from a N.E. direction, the other from the S.E. These two rivers unite and form the Agobia, which discharges itself into the sea, forming the delta which I have described in my book on "Equatorial Africa," and for which I had proposed the name of Delta of the Agobia. Lieutenant Labigot, of the French Navy, and M. Touchard have visited in a steamer the junction of the Okanda and Ngouyai. How far eastward this immense belt of woody country extends further exploration alone can show. In this great woody wilderness man is scattered and divided into a great number of tribes. I was struck by the absence of those species of animals which are found in almost every other part of Africa, and I wondered not at it, for the country was unlike those parts which had been explored before. I found neither lion, rhinoceros, zebra, giraffe, nor ostrich. The great number of species of elands, gazelles, &c., &c., found everywhere else were not to be seen. The forest, thinly inhabited by man, was still more scantily inhabited by beast. Now and then, by the side of the wild man, roamed the apes, among them the savage gorilla, who sometimes destroyed the plantations of the native and sent hunger into his household. There were no beasts of burden, no horse, no camel, no donkey, no cattle; man, or rather woman, was the beast of burden, and I myself never travelled with a load less than thirty pounds. Often miles were travelled over without hearing the sound of a bird, the chatter of a monkey, or the footsteps of a gazelle. The humming of insects, the falling of a leaf, or the gentle murmur of some hidden stream, came only upon our ears to break the deadness of this evening silence, and disturb the stillness of this, the grandest solitude man can ever behold—solitude which often chilled me, but which was well adapted for the study of nature. I felt that that field belonged to me: no one had been there. I rejoiced, but then I felt the responsibility of the work which it had fallen to my lot to accept. I felt the difficulties the more as I was alone, no one having been willing to come with me. I was the pioneer, and I felt that on me, perhaps, depended whether or no others should follow in my wake hereafter. I can assure you that my whole soul was engaged in the work I had undertaken, and the days passed pleasantly when illness did not lay me prostrate. The study of the great book of nature made me forget the hardships I had just passed through. I had plenty to do; there was the study of man in his primitive condition, with the records of his habits, customs, and manners, the tracing of his origin from place to place by his language, the study of natural history, and astronomical and meteorological observations to make; and added to these the discoveries of new lands, which would bring continually fresh objects before me. Happily, I could travel under the leafy canopy of the forest, sheltered from the powerful rays of an equatorial sun, and sometimes under it. Though now travelling near the Equator, it does not follow that the heat of the atmosphere was greater than in some other countries, the great moisture of the country being the cause of it. The highest temperature I have observed in the interim was 98° Fahrenheit, in the coolest place under a verandah in a village; at that time I made simultaneous observations of the heat of the temperature in the forest, in which we may say the sun never penetrates to the ground, except that it pierces through the

foliage now and then. From 94° in the village it was at 87° in the forest. From one o'clock to three o'clock the heat remained about the same, not varying more than a degree. The lowest temperature I have seen was 63° to 64°; for a few days the temperature in July never rose more than 72°. This was in the Arhango country. It does not follow, because the temperature is lower than in other countries more removed from the Equator, that consequently the rays of the sun are also less powerful. I have said that the moisture was the cause of it. Unfortunately there is not a general system adopted in ascertaining the power of the sun, so I am afraid we could not compare. The highest degree found by me was 148¾°. The thermometer was simply put on a white board. The thermometer in the shade was 94° Fahrenheit. The maximum heat of the temperature during the day was at three o'clock; the greatest heat of the sun was at one o'clock. The heat of the sun was the same at ten o'clock P.M.; at five o'clock P.M., from 118 to 125, though at five o'clock the heat of the atmosphere was greater. At Mr. Bishop's observatory this year the greatest heat of the sun was 106°; the thermometer hung three inches above the ground; in the shade the thermometer was 89°. The difference of the barometer from highest point to lowest during the day was often from 15° to 18° Fahr. I could not carry on my observations in the heat of the sun more than ten days during the month, being entirely prostrated the day after the observations were made. The hottest months were February, March, and April. In the latter part of May the change becomes sudden. The coolest months are July and August. The hottest months are also when the rains are the heaviest. The highest fall of rain I ever saw in twenty-four hours was 7½ inches. I doubt very much that the rains average all the year round one inch, but I think it never rains 200 inches in the year. Two or three degrees change of latitude makes an enormous difference in the time of the rainy or dry season. Longitude also affects the temperature, though in a less degree. I think these differences of latitude and longitude have been rather overlooked in the study of the supply of water to the Nile, or of the lakes supplying it. In the interior where I reached, there seemed to be no very distinct dry season; we had rain, not very heavy, throughout the dry season, it is true, but it was not accompanied by thunder; the rivers were far lower. The tornadoes come almost always from N.E.; the sky afterwards was beautifully clear. The last rain at Mazola was on the 16th of May, corresponding within a few days with the observation of the year, before the sea storm. The vibrations of the magnetic needle were very great for forty or fifty seconds when the tornadoes took place. While making astronomical observations at night, the sky, previously clear, would become very suddenly covered by a coat of grey vapour, coming always from the S.E., and this lasted one hour or two, disappeared, and then began anew. This vapour did not reach the earth. I never saw but twice during my last journey the sky without cloud; this did not last more than one hour, then all around the horizon was very hazy. The more I went into the interior the more cloudy became the sky in the day, and I had to spend night after night before being able to make astronomical observations. Heavy rain and tornadoes were generally more abundant three or four days before full moon, and also two or three days before new moon sometimes, and often the day of the new moon. In the dry season the wind blows very hard every month at the new and full moon, and lasts for three or four days. Being under the Equator, I took special pains in observing the Zodiacal light, and often its brightness was so great that it merged in the Milky Way, and could not be distinguished from it.

I have wandered somewhat out of the sphere of our section.

The form of governments presented great similarities with each other. I was struck with the mildness of their chiefs, who are more like fathers to them. No king or subject has a right to kill another; killing by accident is not understood; a tooth for a tooth is their law. Questioning the natives about the past, I found that the past was to them a dark sea. They had no record of it; they knew nothing about it, and did not care. One or two of their legends or fables implies that there have been great wars. Then I thought of language. I have carefully noted words of many tribes, including even words of the remarkable tribe of hairy dwarfs which I discovered. I chose names such as sun, moon, stars, clouds, rain, wood, fire, &c. I have carefully noted down their fables and myths. A little knowledge of some of their language was of great use to me, among which a knowledge of the Ashira. My forced stay in that country during the plague that desolated it was of great use, in one sense, to me; after a close study of their languages, which seemed at first very different, I found they presented a great similarity. Their languages, seemed to be derived from two different sources, or they seemed to have borrowed names from two different people. Some of the languages have the letter R very abundant; in others it is unknown. The language of the Commi, the coast tribe, is no help to understand the Baskali; the Baskali and a tribe of the interior Commi cannot make one understand the Ashira; and the three together may not help you to understand the Ishogos; but then each language possesses many words belonging to the other. Their fables, which are handed down from generation to generation, from old to young, are alike in all the tribes; their superstitions and customs are similar; the belief in witchcraft being very prevalent, is the cause of untold slaughter. Cannibalism is unknown south of the Equator. Polygamy and slavery are common to all the tribes; the slaves are treated like members of the family. I have tried in vain to find ruins or remains of buildings, to show that the negro was formerly more elevated than he is now. When other travellers have not been more successful, we must conclude that the negroes are in the same state as they were in ages that are past. The question naturally occurs to every one, how such a curious state of political disintegration as the one I have described to you has happened. We must come to the conclusion that Africa has not escaped many political convulsions, followed by great wars and migrations. I should recommend all travellers to note down words, so that we may see the truths which the language will show between the western and eastern tribes that I have thus far found here. There are a few words from the east that are similar, or pretty nearly similar, with regard to all the tribes. I have ventured to think I shall be able in the forthcoming work I intend to publish to show their common origin. The population of Africa has never been so dense as to fill up that immense tract of country. Tribes migrated, were scattered in every direction, and were lost to each other; others followed, and came between without at first knowing it, until gradually the country became more peopled: they came more in contact with each other towards the rivers. A very striking fact is the different state of society between the east and the west bay. From the accounts of such great travellers as Burton, Livingstone, Grant, Speke, and Sir Samuel Baker, whose most interesting book many of us have read, we learn that the chiefs are cruel, having the right to put to death their subjects at their will; villages are continually sacked by the stranger, and the people carried into slavery; if there is no slavery, the people commit raids, burn villages, massacre the inhabitants, and then plunder their cattle. Polygamy and slavery form essentially part of the system of life of the African. The more wives a man possesses the greater his standing. Polygamy, then, with its evils, has some beneficial effects. A man tries to get as many wives as he is able to pay for among the tribes and clans that surround him, and this brings a friendly feeling of clans and tribes; but then I must say that women are the cause of many of their palavers. From all accounts, we must conclude that slavery has existed among them from the remotest antiquity, and that it existed long before the slave-trade. In the west they treat their slaves like members of the family. The children of slaves born in the country are not sold, neither are the slaves inherited; no one would sell them. Some of the tribes are unlike, especially those north of the Equator, among which are the Ton, Bakailai, and Shekiani; but their wars consist in killing people in ambush. The Tons have come from the N.E. I found no cannibals in my last journey, which was south of the Equator. Those tribes south of the Equator have come from the east and south-east. But it seems to me that the kingdom of Eastern Africa is coming fast to the same state of disintegration. There brother fights against brother, a country gets divided, and then is subdivided, and I think it will go on until they will reach the same state of disintegration as in the west. I have been struck with the steady decrease of the population. And here, Mr. President, I raise my voice in defence of the white man; he is accused of being the cause of it; wherever he settles, the aborigines are said to disappear. I admit such is the case, but I aver that the decrease of the population had already taken place before the white man came, and the white man in coming notices it, but cannot stop it. Populous villages and tribes which I saw for the second time, and who have not seen the white man or his fire-water, have decreased; and this decrease had taken place before the fiery plague I witnessed had desolated the land. Where the slave trade exists, the population must certainly decrease in a greater ratio. Accounts of different travellers who have been in a country a second time notice a decrease. There are many causes that account for it. Time will not allow me to describe them here. I may be laughed at for saying that the African will in time disappear from his continent, like the native Briton from this island, the wild Indian from America, the Australian from his country, the Polynesian from his many islands; and instead of mourning I rejoice that, by an all-wise Providence, the most intellectual race takes the place of the inferior one. In conclusion, let me say, let us never despair; little by little, and by dint of great exertions, that large unknown space of Africa becomes smaller; the distance now between my furthest explorations and the lake discovered by Sir Samuel Baker being about 1,000 miles. In my former work I expressed the belief that an important mountainous country divided Africa near along the line of the Equator; my late further explorations have strengthened me in that belief. The further I went into the interior the higher the land rose, until it reached 2,570 feet above the level of the sea. The altitude of the Ungow country, explored by Speke, Grant, and Baker, is between 2,000 and 4,000 feet above the sea level, and when Baker looked across the expanse of the Albert Nyanza towards the west he saw higher land extending in that direction. I, looking towards the east, saw but a continuation of mountains. The probability is that a country of considerable elevation, varied, and, perchance, richly wooded, extends from the western land I have explored to the country of Sir S. Baker. I have already told you how humid the climate is, and you are well aware how short is the course of the rivers that find their way to the sea. The quantity of rain falling at and near the Equator is immense, and there are probabilities of great rivers and great lakes receiving these waters still to be discovered. After reading Captain Speke's book while in Africa, I wrote to Sir Roderick Murchison, saying, if I remember correctly, God forbid that I should try in the least to detract from the great discoveries of Speke; but, judging from the enormous amount of rain falling under the Equator, other rivers or lakes lying to the west will be found. I may repeat this opinion, and I believe that more rivers and lakes will be found westward from the great Albert Nyanza Lake. It was my hope to have traversed the whole breadth of that mysterious land; and all was going on well and pleasantly, with every prospect of success, when an unfortunate accident put an end to my hopes. Having only four men and three boys, we had to retrace our steps, and I can assure you that if I had had twenty-five, I should not have done so.

Sir Roderick Murchison bore testimony to the veracity of M. Du Chaillu, who, he said, was a most resolute, magnanimous, and energetic man, and who had been prevented from carrying out his intentions by an unfortunate accident of the firing of a gun.

Mr. R. J. Hind said he would as soon rely on the observations of M. Du Chaillu as upon those of the best astronomer of Europe.

Dr. Mury, who had been in the country of the Gaboon, and elsewhere in Western Africa, said that although naturalists had reasonably questioned some of the extraordinary statements made by M. Du Chaillu when he first came forward, yet he could corroborate much that M. Du Chaillu had stated.

Section F.—Economic Science and Statistics.

Inventors and Inventions, by Mr. Bell Galloway.

Posterity it has been generally said will do inventors justice. The exact meaning of that idea will be found difficult to comprehend.

Lovers of science, generally speaking, specially amongst practical working men, hope to live by the fruit of their labours, and in all property the skill or work of the brain stands first in its origin or value.

The age we live in, nevertheless, abounds with *anomalies*, and *probably* one of the greatest, grossest, most injurious, and disgraceful *is* that men, generally speaking, who are endowed with

inventive genius are permitted for years to struggle on through varied circumstances, and sometimes to the termination of their earthly lives, before their lives or works are appreciated.

The question I submit is one of great importance. One of much greater national and general commercial importance than may at first appear.

In every age where genius has been left for many years to struggle unacknowledged or unappreciated, so, correspondently, has that town or locality been deprived of much commercial gain. And here, in this ancient town of Nottingham, converging centre of much commercial manufacture, birthplace of as great an inventor as ever lived, I would say in this our age—I mean Samuel, the late Samuel Hall, the father, so-called, of steam surface condensation and many other valuable invention—here would I, with your aid, the aid of the British Association for the Promotion of Science, seek to promote science by, if it be possible (and it is possible), to produce such a change or better state of things, so that inventors may at least *live* by their talents, and see in their *lifetime* that their inventions are appreciated.

The question, I know, is wide, and will admit of much difference of opinion; yet, permit me to say, upon investigation it will be found easy of solution, and the remedy simple and practical. First, as to commercial loss, that in value, I assert, cannot be correctly estimated.

James Watt, the father, so-called, of steam engines, struggled for nearly nine years, mending and making surgical instruments in a small shop in Glasgow, before he was appreciated, or as a practical man known. The late George Stephenson, my good old master, whom I worked for when a boy at *canny* Newcastle, took out several patents, struggled on for many years, had his house burnt down, lost his all; and as he said to his wife Fanny "I say, lass, I cannot afford to pay the coach to Darlington, so I mun just take shankie naggie (that was a stick in his hand), and I'll get there somehow." Well, he got there, and met with good, Christian, sympathetic George Pease, and we see the results; and who, I ask, can fully estimate it? Take others—as many as you please. Get Smiles's works, and read them with attention. His Industrial Biographies—his Lives of the Engineers—"study the mottoes" in the books, and you will find that in every age the best, the 'most valuable men," have been neglected. But let me come nearer still. Take the practical life of Mr. Henry Bessemer, whose invention has now reduced "steel" in price from fifty to thirteen pounds per ton, and so saved, and will save, millions of pounds sterling, whose genius has enriched many a family, given work to thousands of men, honoured Great Britain, and extended commerce, and here you have a living man, who struggled many years. He himself may tell you how, but the Patent Office proves his perseverance in one thing and another, and just like George Stephenson, until he at last found friends, did not succeed, and so proportionably has all been benefited, and what more shall I say? I might proceed, but I will not; I could also appeal to my struggling self. But let us seek out the remedies. And, first, I suggest that the balance of the money which honestly belongs to the inventive class, approximating now towards one hundred thousand pounds above the expenses of the Patent Offices and machinery connected therewith, should be applied as the foundation of a fund to develop practical inventions. Let the British Association contribute to, and manage the arrangements of, that fund, by and through practical means, which may be devised and adopted, and let the results of such experiments from approved inventions be published as they are completed, and let inventions be proportionably paid or rewarded in accordance with the value of their plans; and then I will make bold here to predict that England's wealth and England's glory, England's greatness and power, will be much increased, and many of the *anomalies* in the sciences will vanish, mankind be vastly improved, trade and commerce greatly extended, and the good time will come when all mankind may truly rejoice together. In conclusion, I take leave to assert that the development of the arts and sciences is the cause of the production of all wealth and greatness, and that nations do and will proportionately increase in power just as they appreciate, foster, and encourage genius. I would further suggest that the Government of England should equitably reward or pay inventors for the plans which have been by them supplied and adopted by the Admiralty, and that the Government should provide for the descendants of such men as Samuel Hall, to whom I have referred, who spend their lives and property in the promotion of plans which confer such commercial advantages. Thanking you for the indulgent hearing you have given me, and inviting your opinions, I resume my seat.

Mr. STUBBINS disputed the right of the inventor to insist upon society finding a dry nurse for him, and asserted that the man whose business capacity applied a patent was entitled to proportionate remuneration. He would be glad to see patents done away with.

Mr. WAKEFIELD spoke of the want of continuity in inventors as being often the cause why they did not reap advantage from their inventions.

Mr. F. HILL pointed out that his brother could not have taken out a patent for the penny postage, and yet it would not be denied that he should derive no benefit from the working out of such an idea.

Mr. CORNELIUS VARLEY advocated the right of inventors to the protection of patents.

Mr. SENIOR held that economical principles ought to be adopted by inventors, who might easily find persons to aid them in utilizing valuable inventions, whilst there ought to be some means of rewarding those whose ideas were of public value, and could not be made personally profitable.

Mr. MARTIN doubted that the Fee Fund ought to be drawn upon and whether the fees ought not rather to be reduced, if they were too light. Inventors might subscribe to a special fund which might be distributed by a jury.

Mr. J. P. HEYWOOD pointed out the payment of salaries of £5,000 to the Solicitor-General and the Attorney-General were difficulties in the way of touching the fund.

Professor HENNESSY said Mr. Heywood had stated a striking anomaly, that gentlemen in professions in which high and remunerative positions were open to them, received large salaries from the Patent Fee Fund, whilst there was no fund from which to reward those to whom no such careers were open in this, as in other countries.

Mr. GALLOWAY, in reply to the argument that inventors could get aid, asked how it was that such men as Watt, and Stephenson, and Bessemer, had to wait so long for friends and recognition? Smiles's Biographies of Inventors proves that at all times inventors had struggled with difficulties.

THE DRAMA.

TRUE TO THE CORE.

TO produce a drama which shall be at once national and nautical, and shall be a good acting piece as well, deserves to bring the author more than 100*l*. Mr. Slous has fulfilled the conditions of the Cooke Prize, and the enterprising managers of the *Surrey* have done their best to support him. The appointments of "True to the Core," and the *mise en scéne*, are the best things in it. The plot is by no means deficient; but we cannot say much for the dialogue. *Martin Truegold* (Mr. Creswick) is True to the Core. He is married to *Mabel* (Miss Kate Saville) the very day the Spanish Armada comes in sight of the coast of Devonshire. *Martin* combines the three characters of a Devonshire pilot, host of the Pelican, and keeper of the beacon of Plymouth Hoe. In his latter capacity he is about to light up the signal which warns England of its danger, when a cup of his own wine, drugged, is handed to him by a Jesuit in disguise, who hopes thereby to effect two objects: one to prevent the beacon being lighted; the other to carry off *Martin* to the ship of the Spanish Admiral, and provide King Philip with an experienced pilot. The first expectation is defeated at once. *Marah* (Miss G. Pauncefort), a gipsy girl madly in love with *Martin*, fires the beacon for him, and laughs at the Jesuit *Dangerfield* (Mr. H. Marston), whilst *Martin* is carried off to the ship of *Don Diego de Valdes* (Mr. E. F. Edgar). There we find him at the beginning of the second act threatened with torture and death, unless he consents to steer the vessel into Plymouth Hoe. He feigns submission, and directs it right on to the Eddystone Rock. The great ship breaks up bodily in our presence; and out of its 800 occupants but few are found as the curtain rises again, clinging to the rock which is every moment likely to be covered several fathoms by the rising tide. Amongst them are *Martin* and his wife. Instinctively they cling together somewhat apart from the Spaniards. An English ship heaves in sight, but seeing none but enemies, for *Martin* and his wife lie almost below the water-line, stands off. The Jesuit perceives their safety lies in the appearance of *Martin*, and persuades him to swim from the rock and gain the protection of his countrymen. But first he is made to take an oath that he will never reveal the mode by which he was entrapped to be the comrade of the Spaniard. The scene of the shipwrecked men lying in mid-ocean on the rocks, the tide gaining on them, their consultations, their daggers held to *Martin's* breast, and his reluctance to enter into any compact with his country's enemies, forms the most effective scene in the whole piece. Mr. W. Mather was called to receive the congratulations of the spectators, which he well deserved. The bad society in which Martin was found, and his inability to explain how he got there, end in his being condemned to death as a traitor. Fortunately *Wallet* (Mr. Shepherd), a pedlar, is in possession of a ring. This token is intelligible enough to *Queen Elizabeth* (Mrs. Morton Brooks), whose appearance in the fourth act not only saves *Martin* from his doom, but whose sword confers knighthood upon him. A landed estate and a collar of jewels complete his endowment as the curtain falls. There is no lack here of stirring incident, but the interest is not concentrated. It is national, not personal. The enemies of *Martin* do not hate him, but England. His resolve to steer the Spanish Admiral on the Eddystone is too unprepared. As a spectacle, however, the sudden change from the luxury of the deck of the Santa Fé to its visible breaking into pieces is very effective, and will bear to be seen several times. A few telling sentences thrown in here and there would greatly help to redeem the undeniable flatness of the dialogue. The audience who congregate at the Surrey are evidently quite prepared to welcome any sally of patriotism or wit. Bye-play there is none; and *Martin* is in greater danger from his fidelity to a promise extorted under pain of instant death, and given to a Jesuit, than from his refusal to betray his country. It is not, however, on subtleties like these that the success of the piece depends. The large stage is turned to good account; and, as a spectacle, we must endorse the verdict of our contemporaries, and say that "True to the Core" is deserving of the highest praise.

MISCELLANEA.

MR. HART, a native of America, but long resident at Florence, has lately completed a remarkable group, called the "Triumph of Woman," the aim of which is expressed by the action of a beautiful woman, who robs Cupid of his last arrow.

MR. CONELLY, an English sculptor, also residing at Florence, has just completed an American subject for a wealthy American connoisseur. It is called the "Return of Peace," and the group is composed of three figures—two female ones representing America and Peace, at whose feet there lies dead a form of the human-fiend stamp, conveying the idea of Rebellion crushed.

GRANVILLE PERKINS, an American artist, is now at work upon a large picture of Central American scenery—a composition of ancient architecture and tropical vegetation—for the coming Exposition at Paris.

THE September number of the *Atlantic Monthly* contains a third sonnet by Professor Longfellow, "On Translating the Divina Commedia":—

I lift mine eyes, and all the windows blaze
With forms of Saints and holy men who died,
Here martyred and hereafter glorified;
And the great Rose upon its leaves displays
Christ's Triumph, and the angelic roundelays,
With splendour upon splendour multiplied;
And Beatrice, again at Dante's side,
No more rebukes but smiles her words of praise.
And then the organ sounds, and unseen choirs
Sing the old Latin hymns of peace and love
And Benedictions of the Holy Ghost;
And the Melodious bells among the spires
O'er all the house-tops and through heaven above
Proclaim the elevation of the Host!

THE new edition of "Line upon Line," just published by Hatchard and Co., is a very pattern of a child's Scripture History, and without having the appearance of a task-book, which, whether sacred or secular, most children are averse to read, gives to a young mind a very fair knowledge of the Bible. It is interspersed with woodcuts, and here and there are verses illustrative of some prominent incident. In a

preliminary chapter, and at the end, we have a series of plain questions that any child that has paid an average amount of attention to what he has read ought readily to answer. We look for the second part, which will complete a work most suitable for the young.

We are glad to learn from the *Times* that the establishment of Monte Cassino is to be spared, and will be maintained in its present state as a national monument. The archives, library, and monuments of the abbey remain intact, and the Abbot Tosti will be keeper. The Florentine Convent of San Marco, famous for the frescoes of Fra Angelico, Fra Bartolomeo (not Bar*tomeo*, as the *Times* and the *Pall Mall Gazette* have it), and its association with the Dominican, Savonarola, is also spared.

The Royal Exhibitions to the Royal School of Mines, Jermyn Street, and the Government School of Science, Dublin, consisting of 50*l.* a-year for three years and free admission to the respective Schools, which are awarded by the Science and Art Department after the May Science Examinations, have this year been awarded as follows: Those to the Royal School of Mines to German Green, aged 14, Monitor at the Lower Islington Public School, and Frederick J. M. Page, aged 17, son of a carriage-builder, London; those to the Government School of Science have been gained by Charles G. Stewart, aged 16, Chemist, Camden Town, London; John M'Allan, aged 22, Chemist's Assistant, Dublin; and Stewart Williamson, jun., student of the Royal College of Chemistry, London.

Messrs. Routledge have just issued three sixpenny song-books, called respectively, "The Family Song Book," "The Social Songster," and "Everybody's Song Book." The selections are appropriate to the titles.

After the meeting of the British Association at Birmingham, in 1865, a Local Industries Committee was formed for the purpose of compiling a series of reports on the products of the Midland Hardware District. The aim was to describe the "date of introduction and early history, the obsolete articles, the curiosities and oddities, the new varieties, the increase since 1849, the effects of the spread of civilization on the supply of raw material, the new processes, the machine or hand labour, the employment of women and children, the effects of improvements on cost, the home and foreign trade, the effects of the French Treaty and the American War, the other seats of manufacture, the numbers employed, the average earnings, and the general condition of the workpeople," as relating to every principal trade in the town and district. These reports, eighty-four in number, have at length been collected and edited by Mr. Samuel Timmins, and are issued in a handsome octavo volume of more than 700 pages. Not only have the contents been written in Birmingham, but the volume has been printed there by Messrs. Billing, Son, and Co. Mr. John Hardman Powell has given the design for the cover, and the die was cut at Messrs. Hardman and Co.'s works.

Mr. Henri Brugsch has issued the prospectus of a "Hieroglyphical and Demotic Dictionary," which is to contain "the words and groups most used in the sacred and popular languages, and writings of the ancient Egyptians, their definition in French, German, and Arabic, with notes on their affinity with the corresponding words in Coptic." It will be published in twelve parts, each consisting of 100 pages. The text will be lithographed, printed on writing paper, and interleaved. The work will contain the results of Mr. Brugsch's studies, and his researches during twenty years bestowed upon Egyptian philology. Messrs. Williams and Norgate will receive the names of subscribers in this country.

Died on Friday, the 7th, at Cheltenham, Septimus Tennyson. He was brother of the Poet Laureate, and, according to "Men of the Time," was himself a poet. We know he had written much, but with the exception of two or three sonnets contributed by him to the clever "revived" *Literary Gazette*, which perished after eight or nine numbers, and two or three pieces in amateur publications, we are not acquainted with anything he has printed. He was a gentle, trusting, loveable man, and all who knew him knew his great worth, and will lament his loss.

The Religious Tract Society has just issued two very pretty little volumes on "Egypt," and "Our Australian Colonies." Both are historical as well as descriptive. Mr. Trevor runs over the fortunes of Egypt from the Conquest of Alexander the Great down to the death of Mohammed Ali. Mr. Mossman has contributed articles on "Australia" and "Australasia" to the "Encyclopædia Britannica," and is quite at home in his subject. The plans of towns and harbours add considerably to the value of the book.

Mr. Charles Maclaren, formerly editor and proprietor of the *Scotsman*, died on Monday last, at his house, Moreland Cottage, Grange. Mr. Maclaren had reached the advanced age of 84, having been born in 1782. In the year 1817, when holding a subaltern office in the Customs, he established, in connexion with the late Mr. W. Ritchie, the *Scotsman* newspaper, and acted as its anonymous editor for four or five months. Circumstances rendering it inconvenient for him to appear as editor, he relinquished that post to the late Mr. J. R. M'Culloch. He resumed it, however, after an interval of two years, and continued to exercise the editorial functions until compelled by ill-health to resign them in 1847, still, however, writing occasionally for the paper, when placed under the management of Mr. A. Russel. He was the author of "A Treatise on the Topography of Troy" (1822), of which, after visiting the district, he published an improved and illustrated edition in 1863, under the title of "The Plain of Troy Described." He wrote also "The Geology of Fife and the Lothians" (1839); some articles in the "Encyclopædia Britannica," and contributed many scientific papers to the "Edinburgh Philosophical Journal." Mr. Maclaren was a member of the Royal Society of Edinburgh, of the Geological Society of France, and of that of London.

Dr. Schmitz has informed us that the notice we gave last week of the London College of the International Education Society may be open to some misconception. Whilst the main design of this school is, as we stated, to found a system of education suitable for the present age, yet classics are by no means to be neglected. Latin and Greek will, however, occupy different places, will be taught in a different way, and for a different end to that assigned them in our public and private schools; and, from the novel and rational mode of teaching, possibly boys who have passed through the studies of the College will possess a more thorough knowledge of classics than those leaving schools where these have been taught almost exclusively. If parents would only reflect, they would see the gross injustice of not enabling their children to gain more instruction than is afforded at the public schools. Only this week we questioned two intelligent lads who are attending one of the largest and best public schools in London. They informed us that the three years they have been in the school they have never been taught an iota of arithmetic, geography, or modern history of any kind. Those subjects were only taken in the junior classes, not in the senior, and yet many of the boys never pass through the former classes at all. Such facts are well known, and yet not considered as anything extraordinary or improper. London College appears to be provided with an efficient staff of masters, and besides Dr. Schmitz, the Principal, Mathematics are entrusted to Mr. Core, M.A.; English and Elementary Latin to Mr. Millard, B.A.; Natural Science to Mr. Barrett, late of the Royal Institution; French and Drawing to M. Barrére; German to Dr. Althaus; and Music to Mr. Duggan.

The *Round Table* provides the following:—

THE DIFFERENCE.

Men lose their ships, the eager things,
To try their luck at sea,
But none can tell, by note or count,
How many there may be,
One turneth east, another south—
They never come again,
And then we know they must have sunk,
But neither how nor when.

God sends his happy birds abroad—
"They're less than ships," say we;
No moment passes but he knows
How many there should be.
One buildeth high, another low,
With just a bird's light care—
If only one, perchance, doth fall,
God knoweth when and where.

We have seen the prospectus of an "Universal Tourist Company," with a capital of 50,000*l.* The originators, with a view to make their excursions general and practicable during the Universal Exhibition of Paris of 1867, have devised this plan: "The Company proposes to correspond with the Secretaries or Presidents of Literary and Mechanics' Institutions, Working Men's Clubs, Trade Unions, Heads of Firms, and others, so as to induce them to form themselves into groups and districts, and to collect among themselves the moneys for the various charges (a scale of which will be published from time to time) payable by the subscribers in easy instalments. The Company will issue stamps, or receipts, of the value of one shilling sterling each, for every shilling thus collected, and they will also issue *Livrets matricules* (or books of general information), the pages of which will be divided into small squares, so as to include the printed shilling receipts. Members of a corporation and heads of firms, may, if they choose, contract for their journey or stay in towns. A weekly advertising paper will be given *gratis* to the Company's own excursionists, and also to those provided with 'accommodation tickets,' who will obtain by this publication general information, such as departure of trains, places of amusement, hotels, board and residence, and also the weekly doings of the Commissioners of the Paris Universal Exhibition."

America has just lost one of her few original poets. The Rev. John Pierpont was born in 1785, in Connecticut. His first production was "Airs of Palestine," which was written for recitation at a charity concert. Many of his poems still remain in MS. He was most successful in religious poetry, an example of which is the dedication hymn written for the Congregational Church in Plymouth, upon the ground occupied by the earliest Congregational Church in America:—

The winds and waves were roaring;
The Pilgrims met for prayer;
And here, their God adoring,
They stood, in open air.
When breaking day they greeted,
And when its close was calm,
The leafless woods repeated
The music of their psalm.

Not thus, O God, to praise Thee,
Do we, their children, throng;
The temple's arch we raise Thee
Gives back our choral song.
Yet, on the winds, that bore Thee
Their worship and their prayers,
May ours come up before Thee
From hearts as true as theirs!

What have we, Lord, to bind us,
To this, the Pilgrim's shore!—
Their hill of graves behind us,
Their watery way before.
The wintry surge, that dashes
Against the rocks they trod,
Their memory, and their ashes,—
Be thou Their guard, O God!

We would not, Holy Father,
Forsake this hallowed spot,
Till on that shore we gather
Where graves and griefs are not;
The shore where true devotion
Shall rear no pillared shrine,
And see no other ocean
Than that of love divine.

Amongst the Lincolniana now circulating in America, the following are as good as any: "One was concerning John Tyler, for whom it was to be expected, as an old Henry Clay Whig, Mr. Lincoln would entertain no great respect. 'A year or two after Tyler's accession to the Presidency,' said he, 'contemplating an excursion in some direction, his son went to order a special train of cars. It so happened that the railroad superintendent was a very strong Whig. On "Bob's" making known his errand, that official bluntly informed him that his road did not run any special trains for the President. "What!" said "Bob," "did you not furnish a special train for the funeral of General Harrison?" "Yes," said the Superintendent, stroking his whiskers; "and if you will only bring your father here in *that* shape, you shall have the best train on the road!"' Another was told to a party of gentlemen, who, amid the tumbling ruins of the 'Confederacy,' anxiously asked 'what he would do with Jeff Davis?' 'There was a boy in Springfield,' rejoined Mr. Lincoln, 'who saved up his money and bought a "coon," which, after the novelty wore off, became a great nuisance. He was one day leading him through the streets, and had his hands full to keep clear of the little vixen, who had torn his clothes half off of him. At length he sat down on the curb-stone, completely fagged out. A man passing was stopped by the lad's disconsolate appearance, and asked the matter. "Oh," was the reply, "this coon is such a *trouble* to me!" "Why don't you get rid of him, then?" said the gentleman. "Hush," said the boy, "don't you see he is gnawing his rope off? I am going to let him do it, and then I will go home and tell the folks *that he got away from me!*"'"

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